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ONE SHILLING.

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ENGINES CAESAR NEVER KNEW! A TANK CHARGES A WALL IN THE STADIUM AT ROME.

In the great Stadium at Rome recently there was a display which would have surprised the spectators of the old gladiatorial combats; that is, a demonstration of Tanks. The occasion was a fête for the benefit of the Italian Red Cross, in the presence of the whole Royal Family. First some light Tanks carried out various war exercises, such as the destruction of barbed-wire entanglements and walls, the crossing of trenches and tree-

trunks, and finally, the crushing of three old omnibuses. Then followed an exhibition of demolition on a larger scale by a big, squat, heavy Fiat Tank. After various evolutions, it made for the exit, but, swinging to one side as it neared the door, charged the wall, bringing it down (as shown in our photograph), and then climbed over the wreckage and departed.



By G. K. CHESTERTON.

I HAVE been in many minorities and have received many controversial challenges from the majority, which I have done my best to answer. Now that I happen to be on the side of the majority, at least on one important matter, I should think it very unworthy not to accept any plausible challenge from any reputable representative of the minority. I am convinced that the pacifist and semi-pacifist apologies for Germany are not only anti-national, but anti-normal. I do not even think that a cosmopolitan contempt for patriotism is merely a matter of opinion, any more than I think that a Nietzscheite contempt for compassion is merely a matter of opinion. I think they are both heresies so horrible that their treatment must not be so much mental as moral, when it is not simply medical. Men are not always dead of a disease, and men are not always damned by a delusion; but so far as they are touched by it they are destroyed by it. But I would always treat an eccentric as an equal, unless I could literally treat him as a lunatic. It is quite clear to me that, if he has a claim to a hearing, he has a claim to an answer. So long as he has a right to talk, he has a right to be talked to. And when a paper of the serious status and standards of the *Nation* puts a clear challenge to those Englishmen who approve of the present Allied policy towards Germany, I most certainly think such a question should be answered; and I will proceed to answer it.

The writer in the *Nation* asks us, in effect, to imagine ourselves in the shoes of the Germans. He asks whether we, as English, would accept such terms, even if "our fault were like midnight" and our cause wrong in every item. It would considerably simplify this part of the argument if the *Nation* could kindly point out any prominent person responsible for the New Germany who does admit that his fault is like midnight, or even like the tenderest twilight. We could see our way clearer, if we could find any particular indications that the average German does think he was wrong in every item, or in any item. But this is a parenthesis; it is an important parenthesis, because it makes all the difference in the world to the wisdom of clemency whether the barbarians are morally in a mood of regret or not. So far as I can make out, in the moral sense, they do not regret nothing in the new Germany, but do not regret much in the old Germany. But the particular point raised by the *Nation* is not what they actually do feel, but what we should feel in their place. Of course, it is possible to get into wild metaphysical maze and tangle to the old tune of "Supposing I were you," for if an Englishman were in the German's place he would be a German. But I accept the challenge to the imagination on the broad lines of the brotherhood of men; and I will put the most obvious answer first. It is the most obvious point about this test that it is never applied to the most obvious examples. It is not

applied to the pick-pocket in the street or the burglar in the back garden; and if it were it would destroy the whole of that system of police protection under which comfortable men like the editor of the *Nation* and myself walk the world in safety. It may puzzle the respectable pacifist to hear it, but I have many moods in which I wish that police system could be destroyed. Strange as it may seem to the internationalist, I really do feel for burglars and pick-pockets the same sort of half-sympathy which he only feels for foreign

But here the *Nation* assumes the guilt not only of the German Government, but of the German people; and only asks us to imagine a similar guilt in the English people. But if it assumes guilt, and admits the idea of punishment which generally accompanies guilt, I cannot see how it alters the case to imagine the attempt to escape which generally accompanies punishment. The justice of it, if disputed at all, should be disputed on the ground that a nation cannot be criminal, or that a nation cannot be punished by nations. I myself

believe that a nation can be criminal, and can be punished for crime. I believe it because I am a nationalist, and still more because I am a democrat—or, if the phrase be more exact, a republican. That is, I believe a commonwealth has a common will, a corporate spirit which can be loved, and which therefore can be blamed. Those who say that a democratic Germany cannot deserve punishment are denying the first dogma of democracy. But the *Nation*, to do it justice, does not deny that Germans might deserve punishment, or that we in a similar case should deserve punishment. It only suggests that we should try to avoid punishment—which is exceedingly probable, but not morally final.

That is the logic of the case; but a more living and sympathetic understanding of it will ultimately lead the same way. The editor of the *Nation* knows very well that I am not a flatterer of British institutions; that on many matters we have been in revolt together; that on some matters I am more in revolt than he. But I do seriously think there is a difference here between British abuses and German abuses, which is a reality, beyond all likes and dislikes. In short, when he asked us to imagine ourselves German, I think he was still only asking us to imagine ourselves English. Heavy as has been the weight of our own corruptions, I can conceive that the English have it in them to act very much as the *Nation* imagines them acting. I fancy they might really both repent and resist. It may be a paradox; but I think they would really resist if they could really repent. But there have not been any true signs of Germany repenting, or as yet even

of her resisting. And if all observers will study this strange situation patiently, I think they will gradually find growing a strong and rather strange impression, about the thing they have hitherto called "Germany." In fact, it has not behaved like a normal nation either in victory or defeat. It was less bitter than a normal nation in defeat, as it had been more brutal than a normal nation in victory. I throw out, by way of a possible explanation, the proposition that it is not a normal nation, or a nation at all. It was a horde of tribes held together by the promise of the sack of Rome—that is, of all the cities of the Roman tradition. So it is possible to have a sympathy with Germans; but it is the same sort of sympathy I have for all the criminal classes, when they are caught.



THE HOMECOMING OF THE "SPRINGBOKS": CAPE TOWN EN FÊTE TO WELCOME THE FIRST SOUTH AFRICAN TROOPS BACK FROM EUROPE.

The first batch of South African troops home from the war in Europe had a great welcome in Cape Town. Our photograph shows them marching up Adderley Street through dense and cheering crowds.

princes and cosmopolitan capitalists. And even where it is hardest to have sympathy, it is possible to have imagination. I can easily conceive that Scheidemann, who helped to trample on Belgium, has nevertheless an intolerable sense of surprise that somebody is trampling on him.

Therefore, on the actual admission of the *Nation* there is an obvious answer the *Nation*. There is no question here of some of the defences offered for Germany. Some have maintained that the German Government was not to blame for doing things which its own spokesman rarely excused or explained away. And some have maintained that the German people did not approve of things for which they circulated medals and sang songs.

EMPIRE DAY IN HYDE PARK: THE KING AT A MONSTER CONCERT.

PHOTOGRAPHS BY ILLUSTRATIONS BUREAU AND C.N.



THE LARGEST CONCERT EVER KNOWN IN LONDON: A CHOIR OF 10,000 CONDUCTED BY DR. CHARLES HARRISS, SINGING THE NATIONAL ANTHEM ON THE APPROACH OF THE ROYAL CARRIAGES (SEEN IN THE RIGHT BACKGROUND).



THE ROYAL PARTY: (FROM LEFT TO RIGHT) PRINCESS VICTORIA, PRINCESS MARY, THE DUKE OF CONNAUGHT, THE QUEEN, QUEEN ALEXANDRA, THE KING, LADY PATRICIA RAMSAY, AND PRINCE HENRY (IN KHAKE).

Empire Day (Saturday, May 24) was celebrated in London by a great open-air concert—the biggest ever known here—held in that part of Hyde Park known as “the Dip,” which formed a huge natural amphitheatre for an audience of some 200,000 people. The conductor and organiser of the concert, Dr. Charles Harriss, a distinguished Canadian musician, had under his bâton the massed bands of the Brigade of Guards and a choir of ten thousand voices, with the Imperial Choir as a nucleus augmented by voices from

practically every choir and choral society in London. The unexpected arrival of the King and Queen, with other members of the Royal Family, was the occasion of an immense outburst of loyal enthusiasm. This reached its height when his Majesty ascended the high conductor’s stand, and was acclaimed by the great concourse who sang “For he’s a jolly good fellow,” followed by tremendous cheers. The Queen then ascended the platform, and renewed acclamations arose.

THE RESCUE OF HAWKER AND GRIEVE: RELATIVES GET THE GLAD NEWS.

PHOTOGRAPHS BY ILLUSTRATIONS BUREAU, FARRINGTON PHOTO. CO., AND "DAILY MAIL."



RECEIVING THE NEWS: MRS. HAWKER LISTENING TO LLOYD'S MESSAGE READ BY THE ACTING VICAR OF HOOK.



MRS. HAWKER'S GARDEN GATE BESIEGED BY ENTHUSIASTIC NEIGHBOURS AT SURBITON: A POLICEMAN ON GUARD.



FAMILY REJOICINGS: MRS. HAWKER CONGRATULATED BY HER BROTHER, CAPT. PEATY—HER SISTER HOLDING HER BABY PAMELA.



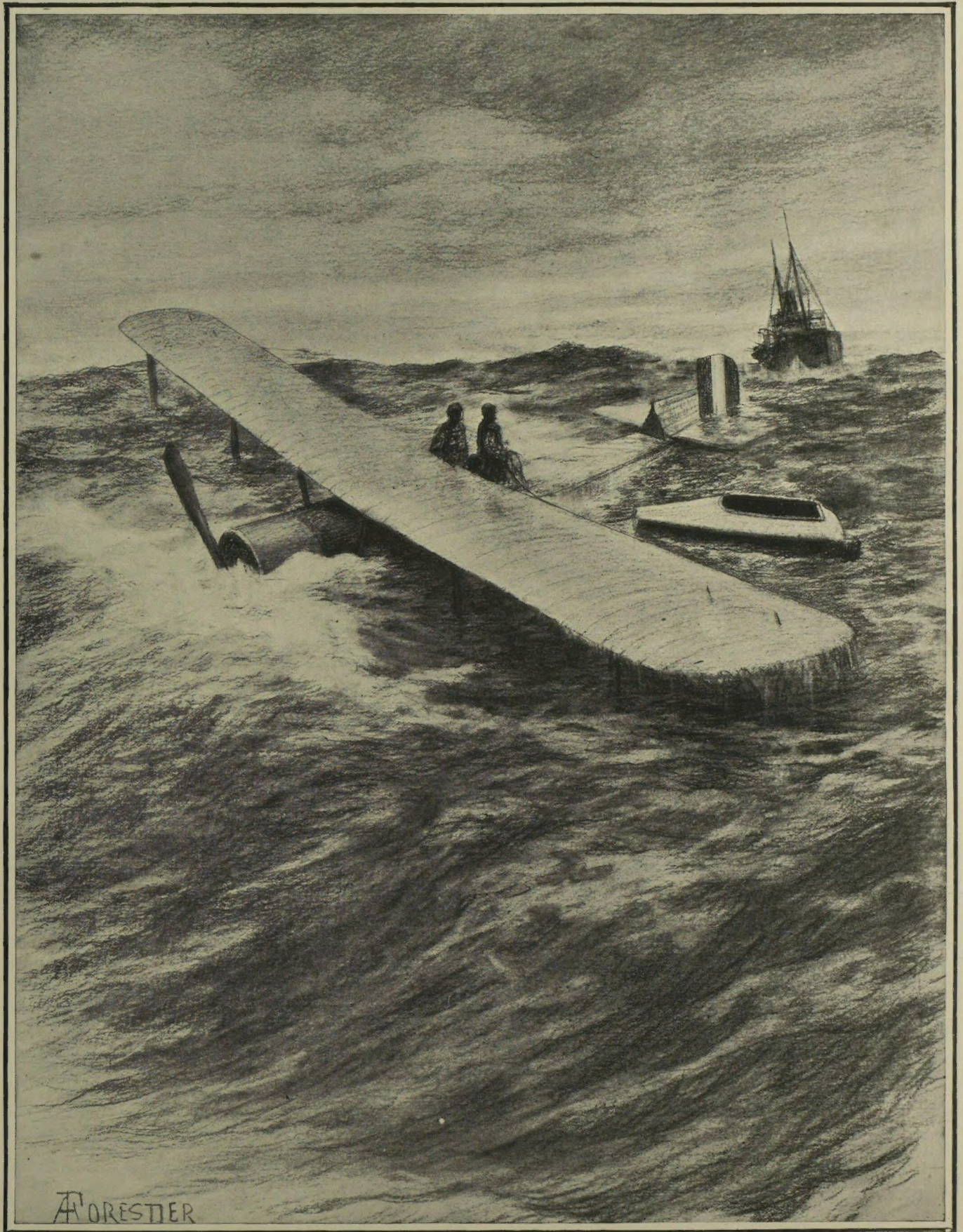
COMMANDER GRIEVE'S PARENTS READING THE NEWS IN THE "DAILY MAIL": CAPT. MACKENZIE-GRIEVE, R.N., AND HIS WIFE.

The news of the rescue of Mr. Hawker and Commander Grieve, pilot and navigator of the Sopwith "Atlantic" aeroplane, was received on Sunday, May 25, and aroused intense enthusiasm. The glad tidings were conveyed to Mrs. Hawker after she left the parish church of Hook near her home at Surbiton. Our first photograph shows the acting Vicar of Hook reading Lloyd's message to her. Mrs. Hawker's baby, Pamela, is seen in the arms of her nurse in the centre of the photograph. The news spread very quickly

through the district, and Mrs. Hawker's house was besieged by neighbours all eager to congratulate her. In the evening she attended service at Hook church, where the Vicar, the Rev. T. J. Wood, preached from the text: "For this my son was dead and is alive again; he was lost and is found." Commander Grieve's parents, Captain and Mrs. Mackenzie-Grieve, live at Droxford, Hampshire, which is also the home of Admiral Sturdee. Commander Grieve himself is a bachelor.

THE "MARY" TO THE RESCUE: HAWKER AND GRIEVE IN MID-ATLANTIC.

DRAWN BY OUR SPECIAL ARTIST, A. FORESTIER, UNDER THE DIRECTION OF MR. H. G. HAWKER AND COMMANDER GRIEVE.



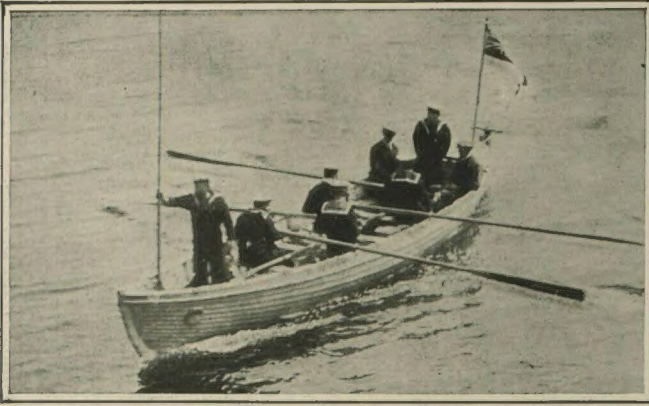
WATCHING THE LAUNCH OF A BOAT FROM THE "MARY": HAWKER AND GRIEVE AFLOAT ON THEIR AEROPLANE.

Mr. H. G. Hawker and his navigator, Commander Kenneth Mackenzie-Grieve, R.N., were picked up in mid-Atlantic, at Latitude $50^{\circ} 20' N.$ and Longitude $29^{\circ} 30' W.$, (about half-way between Newfoundland and Ireland), at 8.30 a.m. Greenwich time (9.30 a.m. British summer-time) on Monday, May 19, by the Danish steamer "Mary," bound from New Orleans to Horsens, in Denmark. They had been flying for 14½ hours, and had been in the water an hour and a-half. About two hours before they came down, realising that they could not reach Ireland, they changed course and flew diagonally across the main

shipping route till they sighted the "Mary." As soon as their aeroplane touched the sea it began to submerge, the lower wings being under water, and the waves were gradually breaking it up. The two aviators, standing on their seats, launched their small detachable life-boat, and then waited till the "Mary" succeeded in putting a boat out—a difficult operation in the rough sea. Their aeroplane was left afloat. On May 23 it was picked up, with the mail it carried, by the American steamer "Lake Charleville," which then headed for Falmouth.—[Drawing Copyrighted in the United States and Canada.]

THE HOME-COMING OF THE ATLANTIC HEROES: THURSO TO LONDON.

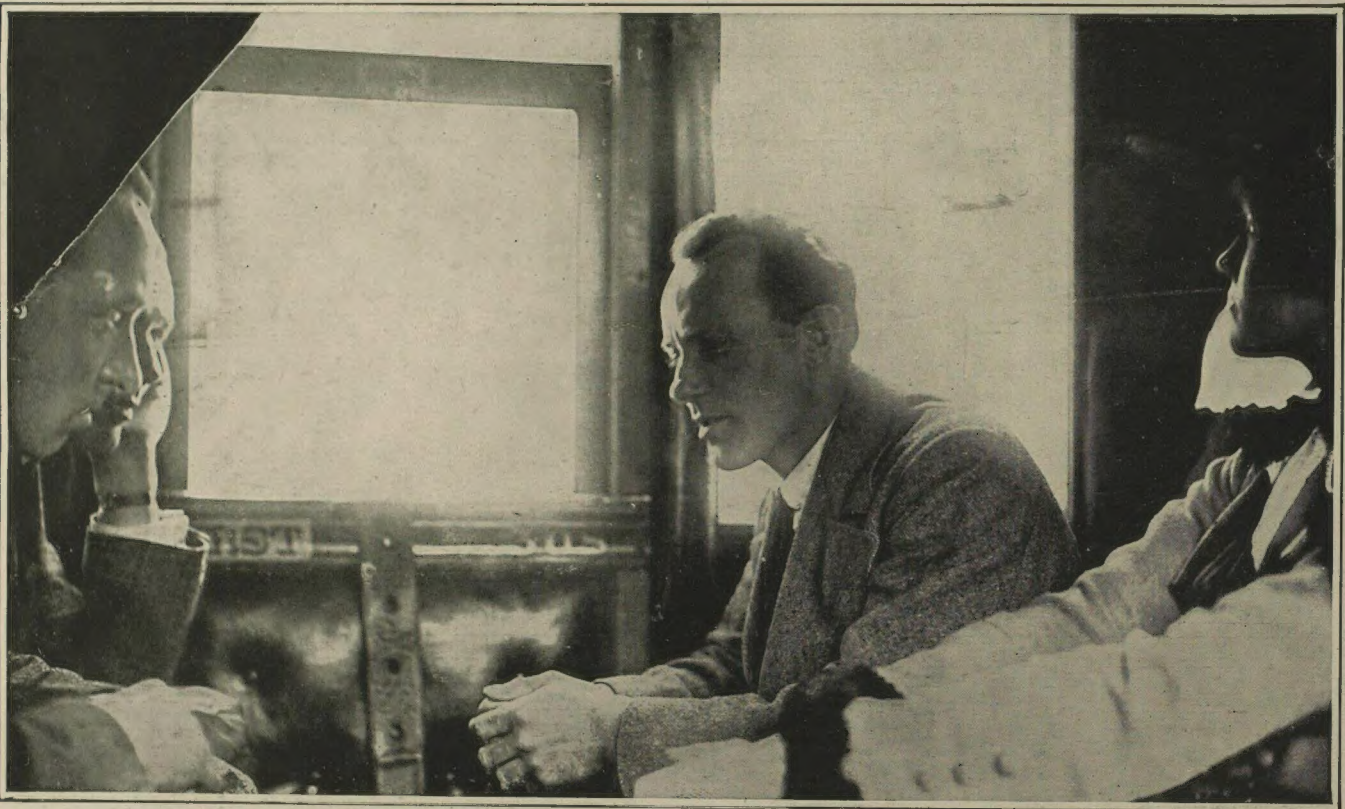
PHOTOGRAPHS BY ILLUSTRATIONS BUREAU, G.P.U., AND L.N.A.



LANDING AT THURSO: MR. HAWKER AND COMMANDER GRIEVE BEING ROWED ASHORE BY BLUEJACKETS.



COMMANDER GRIEVE WAVES TO ESCORTING AEROPLANES: A SNAPSHOT DURING THE TRAIN JOURNEY TO LONDON.



TELLING THE GREAT TALE: (RIGHT) MR. H. G. HAWKER AND MRS. HAWKER; (LEFT) MR. T. O. M. SOPWITH (NEAREST CAMERA) AND COMMANDER GRIEVE—IN THEIR RAILWAY CARRIAGE BETWEEN GRANTHAM AND LONDON.



THE CROWD OUTSIDE KING'S CROSS AWAITING THE TRAIN'S ARRIVAL: AMBULANCE MEN WITH A FAINTING CASE.

The steamer "Mary," which rescued Mr. Hawker and Commander Mackenzie-Grieve, was intercepted on May 25 off Loch Erribol by the destroyer "Woolston," which conveyed them to the Fleet at Scapa Flow, where they spent the night on board H.M.S. "Revenge," as guests of Admiral Fremantle. The next day they were taken to Thurso in a destroyer, and were rowed ashore at Scrabster Pier. From Thurso, where they received a hearty

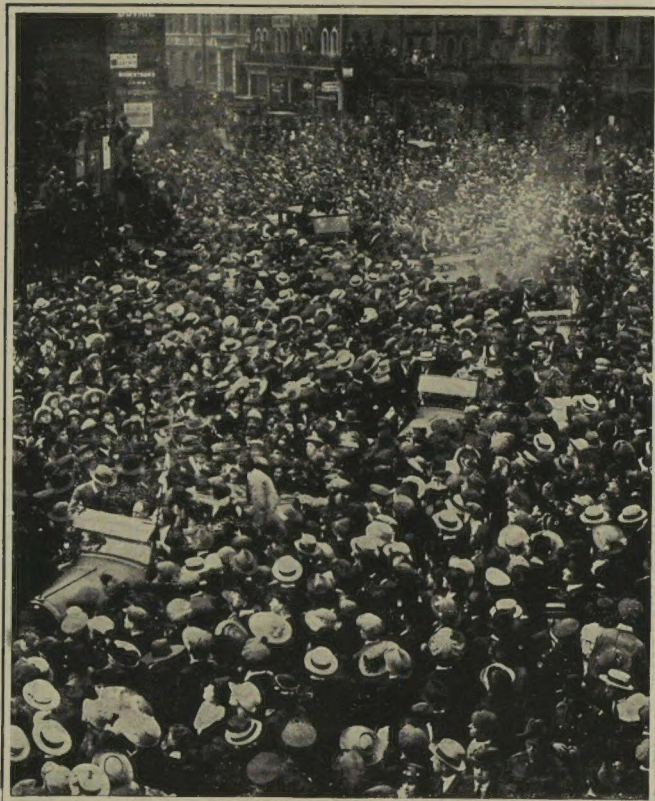


LEAVING KING'S CROSS—ARMISTICE-DAY STYLE: MR. T. O. M. SOPWITH ON TOP OF A CROWDED CAR (ON RIGHT IN STRAW HAT).

Highland welcome, they went on by train to Inverness, and thence, on Tuesday, the 27th, to London. At every stopping place on the journey they were greeted with tremendous enthusiasm, which culminated on their arrival at King's Cross. Mrs. Hawker, with Mr. T. O. M. Sopwith, joined the train at Grantham. As soon as it stopped there, Mr. Sopwith entered the compartment, and escorted Mr. Hawker to his wife.

HAWKER AND GRIEVE IN LONDON: THE HUGE CROWD AT KING'S CROSS.

PHOTOGRAPHS BY TOPICAL AND SPORT AND GENERAL.



FORGING THEIR WAY, WITH AN AUSTRALIAN ESCORT, THROUGH A SURGING CROWD: LEAVING KING'S CROSS IN CARS.



PILLIONED: UNABLE TO PROCEED BY CAR, MR. HAWKER RIDES BEHIND A MOUNTED POLICEMAN.



WITH A BODYGUARD OF AUSTRALIAN SOLDIERS: MR. HAWKER (RIGHT STAR) AND COMMANDER GRIEVE (LEFT STAR) AMID THE ENORMOUS CROWD AT KING'S CROSS.

The train bringing Mr. Hawker and Commander Grieve to London reached King's Cross soon after 7 p.m. on Tuesday, May 27, and they were welcomed with extraordinary enthusiasm by an enormous crowd. A strong body of Australian soldiers took charge of the proceedings, and some of them harnessed themselves to the car in which the two aviators left the station, and dragged it through the crowd. The throng was so dense,

however, that it was impossible to move far. Mr. Hawker was then lifted out and placed, pillion-wise, behind a mounted policeman on his horse, and in that way he proceeded along Euston Road, until the policeman resigned his mount. Eventually the procession, in detachments, reached the Royal Aero Club. On the 28th Mr. Hawker and Commander Grieve were decorated by the King with the Air Force Cross, at Buckingham Palace.

"THE GOOD HAFT" OF BRITAIN'S SPEAR: ROYAL VISITORS AT SHEFFIELD.

PHOTOGRAPHS BY TOPICAL, C.N., G.P.U., AND L.N.A.



THEIR MAJESTIES AT THE GRIMESTHORPE WORKS OF MESSRS. CAMMELL LAIRD: THE KING, AND THE QUEEN (IN THE BACKGROUND) AMONG THE EMPLOYEES.



PASSING A GROUP OF WOUNDED SOLDIERS: THE KING AND QUEEN IN THEIR CARRIAGE.



DRIVING DOWN VICTORIA STREET: THEIR MAJESTIES RECEIVE A HEARTY YORKSHIRE WELCOME.



THE CIVIC WELCOME IN THE VICTORIA HALL: THE KING REPLYING TO THE ADDRESS.



A GUARD OF HONOUR OF OVER 200 MONS MEN: HIS MAJESTY INSPECTING THEM.

Sheffield had a public holiday for the visit of the King and Queen on May 20, and the silence of the great works was in contrast to the strenuous activity when their Majesties visited the city last during the stress of war. In his reply to the civic address, the King said: "We owe our deliverance, first, to the gallant readiness of our sons to lay down their lives in the country's service, and next, to the equal readiness of all at home—men and women, old and young—to afford support and succour to the armies

of the Empire. In that labour you citizens of Sheffield have played a noble part. . . . The armies were the spear-point with which the enemy was overthrown, but the people at home were the good haft without which its blow could not have been successfully delivered." During the day the King inspected a remarkable guard of honour composed of over 200 men, in civilian dress, who had all served abroad in 1914, and were entitled to the Mons medal.

ROYAL VISITORS TO THE "QUEEN OF THE MIDLANDS": AT BIRMINGHAM.

PHOTOGRAPHS BY ILLUSTRATIONS BUREAU, C.N., L.N.A., AND TOPICAL



THE KING AND QUEEN IN BIRMINGHAM: PASSING THROUGH VICTORIA SQUARE.



AT BOURNVILLE: A CHOIR OF WHITE-CLAD GIRLS FLUTTERING COLOURED HANDKERCHIEFS.



IN THE NEW CHILDREN'S HOSPITAL, BIRMINGHAM'S MEMORIAL TO KING EDWARD: THE QUEEN TALKING TO ONE OF THE LITTLE PATIENTS.



IN THE GIRLS' RECREATION GROUND AT BOURNVILLE: THE KING SIGNING THE VISITORS' BOOK.



TALKING TO A LEGLESS SOLDIER: THEIR MAJESTIES WITH SERGEANT KNIGHT, ROYAL FUSILIERS.



THE KING RECOGNISES AN OLD SHIPMATE: HIS MAJESTY TALKING TO MR. TAYLOR NEAL.

On May 21 the King and Queen visited Birmingham, where they were welcomed with no less enthusiasm than at Sheffield on the previous day. From New Street Station they drove, through cheering crowds, to the new Children's Hospital, built as a memorial to King Edward. At a parade of sailors and ex-sailors outside the hospital, the King recognised and greeted two old shipmates—Mr. Taylor Neal, who was with him on board the "Alexandra," and Mr. J. W. Garrett. Then followed a civic ceremony in the Town

Hall, where in his reply to the address, the King said: "The City of Birmingham can justly boast of a position second to none among the great industrial centres of the world, and I feel sure that to-day its citizens are seriously considering the best means of re-establishing British trade supremacy." After luncheon, their Majesties listened to the singing of a massed children's choir outside the Town Hall, and in the afternoon they drove to Bournville. The King specially asked for Major Egbert Cadbury, the destroyer of two Zeppelins,

THE AFGHAN OUTBREAK.



By E. E. L.

LESS than 200 years ago Afghanistan was an outlying province of India, then under Mogul rule, which was fast approaching its end. The time was ripe for revolt, and Afghanistan revolted. Up rose the great Turcoman leader, Nadir Shah, who united his border forces with the Afghan army, swept through Northern India, and sacked Delhi. The loot fell to the Afghans, who murdered Nadir Shah; and Ahmad Khan, a Durani, an Afghan general of cavalry, also one of Nadir Shah's chief supporters, gained the major portion of it, and with it power and fame. With Delhi loot he was able to satisfy the greed of his followers, to win over the Baluchi chiefs, and to establish a native Afghan dynasty in a more or less united Afghanistan. In blood the Durani empire was founded—to last for fifty years only, and for long thereafter the territory which remained Afghan was subjected to the terrorism of this temporary ruler and that until, in the middle of last century, a strong man, Dost Mahomed Khan, established the present Afghan kingdom. Great Britain, intervening in Afghan affairs for the first time, deposed Dost Mahomed and placed Shah Shuja, a former and a weak ruler, on the throne. Followed the first and disastrous Afghan-British War, as a result of which Shah Shuja was killed and Dost Mahomed reinstated on the Afghan throne.

Of all the rich lands of the old Afghan Durani kingdom Afghanistan proper alone remained to Dost Mahomed; whilst Peshawar, the jewel of Afghan cities, was British. So Dost Mahomed laid down a policy of no intercourse with European Powers, and pious aspiration for the reconquest of the old Indian possessions of Afghanistan. Nevertheless he made a treaty with us, and kept it; and in 1857, when Persia seized the Afghan city of Herat, Britain declared war on her, and forced her to give it up. Came the Indian Mutiny, and Dost Mahomed's chance. He might have taken it, but for the astuteness of one of his sons, Afzal Khan, who restrained his impetuous father. If Afzal had succeeded Dost Mahomed, things might have gone very much better for us in Afghanistan, for Afzal possessed great foresight; but his brother, Shere Ali, got the throne, and fought Afzal and Azim his brother. Later Afzal succeeded in turning the tables, and was proclaimed Amir; but Shere Ali gained Persian and Russian support, captured Afzal, and, later, had him murdered.

The eventual recognition of Shere Ali by the British Government brought stability to Afghanistan, for a time; but then came Russian intrigue (1878), and our necessity for counteracting it, leading to the second Afghan War. Yakub Khan,

successor to Shere Ali, made terms with and then wilfully deceived the British Government (the murder of Sir Louis Cavagnari). Further fighting resulted in Abdur Rahman, the son of Afzal, being placed by us on the throne. Abdur Rahman was strong, and he brought peace and contentment to his country. So also proved the rule of his successor and son, Habibullah; but now intrigue, treachery, and their product, murder, have flung Afghanistan once more into violent trouble, and involved that country in war with Great Britain.

The immediate outcome of this is not obscure, for against the forces of aircraft, long-range artillery, and armoured motor-cars it will be very difficult for the Afghans to achieve success. The geographical position of Afghanistan, however, must be borne in mind, and we must not forget that there are many independent tribes on the North-West Frontier who are of the same faith as the Afghans, and more or less of the same blood. So far, the Afghan call to these fierce fighting men has proved of little avail, for they have learnt the strength of the British arm. Nevertheless, it would be unwise to back too heavily on their abstention from fighting. Should it come, we are prepared for it. Britain will hold the Border, and will teach the Afghan intriguers a bitter lesson.

THE ECLIPSE OF THE SUN.



By E. B. OSBORN.

A TOTAL eclipse of the sun occurred on May 29, and an opportunity was afforded of testing the validity of a new theory, already developed by the mathematician, of the effect of gravitation on the course of a ray of light. The eclipse was not visible to the slightest extent in this country or in any other part of Europe. The path of totality crossed South America, thence traversing the Atlantic from Para in Brazil by way of St. Paul's Rocks to Liberia, and finally crossing the entire breadth of Africa. The conditions were unusually favourable, for the width of the path was about 240 miles; while in the middle totality lasted for close on seven minutes.

On ordinary occasions advantage would have been taken of such a comparatively lengthy period of totality to add to our knowledge of astrophysics. The radiant cloud known as the Corona, which envelops the sun and is seen only during a total eclipse, would have been sketched and photographed, while spectroscopic observations would have been made of the chromosphere, the envelope of blazing hydrogen, and of the protuberances that spring from it—the tremendous flames, a quarter

of a million miles in height, which visibly change shape even in the briefest period of totality. However, the two British expeditions, one of which had gone to Brazil and the other to West Africa, did not investigate these wonders of the eclipsed luminary. They were not professionally concerned with the awe-inspiring phenomena of totality, the momentary night which sends birds to roost and causes flowers to close or give forth their nocturnal perfume, and the wave on wave of gloom, pulsations of violet and purple, which ought to have inspired a poem long ago. Science nowadays is mainly concerned with accurate weighing and measuring, and it was a part of this interminable task which our two parties of observers arranged to carry out during the five minutes of totality in Brazil and West Africa.

At the time of the eclipse the sun was in Taurus, and in a region very rich in stars. Photographs of Taurus, when the constellation is a part of the many-glittering scroll of night, already exist, of course; but we have none of the same star-field when the sun is blazing in its midst. The eclipse provided an opportunity of photographing this star-

field in day-time, when the light of the sun was shut off. Assuming that the atmospheric conditions were favourable, and the photographs were procured, it will then be possible to compare the positions of the stars at various distances from the occluded sun with those they occupy in nocturnal photographs taken by the same instruments, and, if discrepancies are noted, then evidence will have been secured to support Einstein's theory that a ray of light passing by a large body is deflected by the force of gravitation.

If it is found that the deflection decreases as the distance of the passing star-rays from the sun increases, a conclusive proof of the mathematical working-out of Einstein's theory will have been procured. In that event, we shall have yet another significant example of the theoretical anticipation of observed facts which led, among other historic achievements, to the discovery of Neptune. And if, on the other hand, no such discrepancies are noticed, the confutation of Einstein's theory or "working hypothesis" will have actually added something to our stock of real astronomical knowledge.

X-RAYS AND THE ARTS.



By MAJOR G. W. C. KAYE, M.A., D.S.C.

THE war has brought the X-rays into prominence on account of the incalculable service they have rendered to surgery and medicine. X-rays (which are invisible, and travel in straight lines) differ from light rays only in the fact that their wave-length is several thousand times shorter. This minuteness gives them the uncanny property of penetrating all classes of substances, whether optically transparent or not. The ease of penetration depends both on the thickness and on the density (or relative weight) of the substance, so that if an object is placed in the path of the rays, a shadow picture will be cast on a photographic plate suitably placed. We can thus spy out the interior of an opaque body without opening it up.

During the last year or so the method has been applied, more especially by the metallurgist and engineer, to the examination of all kinds of materials. The rays have, for example, been used to test whether there is flaw or crack in a metal weld. The steel manufacturer has radiographed his castings and forgings in order that he might diagnose and localise blow-holes and other imperfections to which they are prone. The aeroplane inspector has turned the rays to account in searching for any hidden faults either in workmanship or in the superfine quality of timber used to

build the aeroplanes in which we have established so marked a lead. Some examples of their use in this connection are shown on page 785.

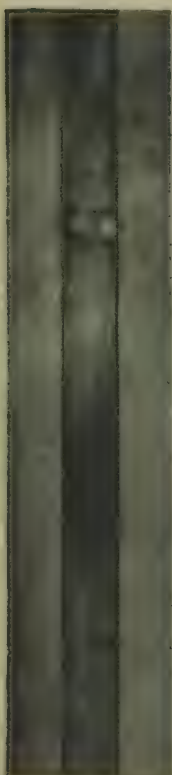
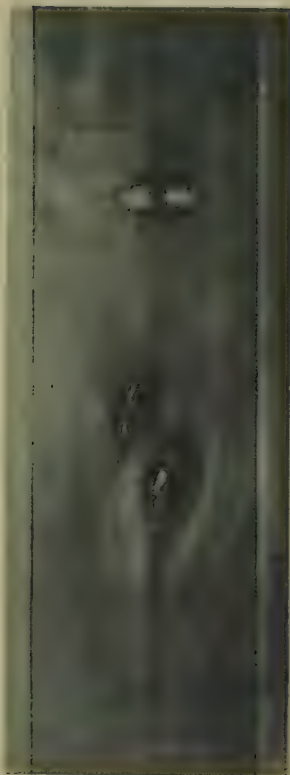
The electrical engineer has employed the method to examine the quality of the carbon poles which lead the current in and out of electrical steel furnaces; or again, to scrutinise the carbon brushes for dynamos. The manufacturer of explosives has, by the same means, tested the correctness of the internal fittings of shells, torpedoes, cartridges, fuses, and grenades after assembly. The motor manufacturer has, by the use of the rays, photographed the interior of a carburettor while in operation, and so detected an illusive fault (see illustration); in another instance a magnet was similarly scrutinised, and the cause of its imperfect working revealed. The method would also be very convenient for detecting hidden corrosion in metals—for example, in gas-cylinders or the armouring of cables. The rays have been used by the Post Office for testing the amount of mineral matter in gutta-percha. At the moment, the method is restricted by the limit to the thickness of material which can conveniently be penetrated. About two inches of steel is the present practical limit if the exposures are not to be intolerably long. In the case of timber or the light aluminium alloys, now so largely used for the framework of rigid airships and

many other purposes, the above figure may be considerably exceeded. The method is very sensitive to minute differences in thickness—for example, the tool-marks used to face specimens are often clearly shown in radiographs of metals.

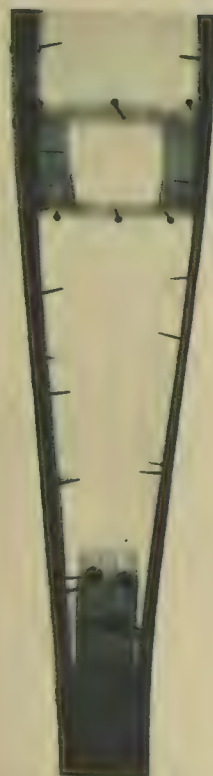
Outstanding developments of what may be called radio-materialography will probably only follow marked and necessary improvements in X-ray equipment, almost every part of which is susceptible at present of much higher efficiency. In any event, however, we may anticipate novel outcomes as the possibilities of X-ray examination unfold themselves to users of material for constructional purposes. For instance, the combination of X-rays and the cinema would permit the examination of hidden moving machinery. There is one other and entirely different way in which X-rays may supplement the above method of examining material. Professor W. H. Bragg, F.R.S., to whom the subject owes so much, has shown that the X-rays enable us to examine in detail the nature and extent of the crystallisation of a body. Now it appears to be the case that there is little in nature which is not crystalline to a greater or less degree, and further it is certain that crystalline structure is of first importance in determining the quality of substances such as steel. There is here a large field for the research worker.

REVEALING FAULTS OF WORKMANSHIP: X-RAYING METAL AND WOOD.

PHOTOGRAPHS BY KNOX AND KAYE, AND PILON AND PEARCE



X-RAYED WHILE IN OPERATION: THE CARBURETTOR OF AN AEROPLANE ENGINE



REVEALING TWO KNOTS AND A GRUB-HOLE: X-RAY PHOTOGRAPHS (FRONT AND SIDE) OF A LAMINATED WOODEN AEROPLANE-SPAR.

THE BLOCK BADLY FITTED AND SPLIT: AN AEROPLANE STRUT



SHOWING THE WOOD SKID CUT TOO SHORT AND PACKING (B) INSERTED BELOW: AN AEROPLANE WING-SKID X-RAYED.

As explained in an article on the subject elsewhere in this number, the system of X-ray photographs (which has been of such great value for surgical purposes) has now been applied to the detection of defects in metal and wood substances in various forms of engineering and manufacture, including aircraft construction. As the safety of an aeroplane and its occupants may be endangered by faulty workmanship, the X-ray method in this case is of vital importance. Its use as applied to metal and wood and other opaque



SHOWING DEFECTIVE RIVETTING AND A SOLDERED SEAM: THE END OF AN AEROPLANE STEEL PETROL-TANK X-RAYED.

materials is known as radio-materialography. A note on our first photograph is given above. The third one (on the right at the top) shows the interior of the end of a hollow "box" aeroplane-strut. The internal strengthening block at the end is shown by the X-rays to be badly fitted, and each of the screws is seen to have split the block. The left-hand lower radiograph, of an aeroplane wing-skid and its socket, shows that the skid had been cut too short and that packing (B) had been introduced into the space below.

"ABOUT A NUMBER OF THINGS."

A Chat on Science by SIR RAY LANKESTER, K.C.B., F.R.S.



MAD DOGS AND HYDROPHOBIA.

PART I.

ONE of the injurious results due to the tendency during recent years of journalists to supply the public with ill-founded announcements of a horrifying or alarming nature has been to create an attitude of stolid incredulity among their readers, and, consequently, indifference to warnings which are really of urgent importance. The outbreak in this country within the last few months of the terrible and truly awful disease known as "rabies," though its progress has been duly chronicled in the Press, has not caused that anxiety in the general public which is desirable in order that every possible step may be taken to free this island once again from the deadly pest. It is true that during an outbreak of "rabies" the number of cases in which man becomes infected by this disease—known when it develops in him as "hydrophobia"—is very small in proportion to the number of dogs so afflicted. But the absolute incurability of the disease, once established, the certainty of death within three to five days of its declaration in a human victim, and the extreme agony of the nervous paroxysms by which it is accompanied, render the most stringent measures for its extirpation not merely justifiable, but obligatory.

The word "mad," as applied to a dog suffering from rabies, has reference merely to the excitable condition and unaccountable ferocity of the animal, and does not imply that the cause of that condition is identical with that which is at work in the case of the "mad bull" or the human "lunatic." It is better to call the dog or other animal suffering from rabies "rabid"; and it is now becoming usual to speak of the disease, when it is communicated to man, as "rabies," rather than to make a misleading distinction by giving it the special name "hydrophobia." In French it is called "le rage," in German "Hundswuth" or "Wuthkrankheit," in Greek it is "lyssa." The disease has been known from the earliest times, and is mentioned by Aristotle, Xenophon, Plutarch, Virgil, Horace, and Ovid. Celsus describes it, and gives directions for the treatment of men bitten by rabid dogs; whilst Galen describes minutely hydrophobia in man. Very little progress was made in modern times towards understanding or in any way checking the disease beyond the avoidance of the bite of a rabid dog, and the application of cauterisation to the bite when inflicted, until its study was taken in hand by Pasteur about thirty-five years ago. It was much more frequent in France than in this country, and its painful nature and the hopelessness of cure presented themselves as a sort of challenge to this great investigator, who had already successfully dealt with several destructive diseases due to infection by excessively minute living parasites, each such disease having been shown by him to be caused by its own specific or peculiar parasite. These parasites or disease-germs were called "microbes" by Pasteur.

Important facts as to rabies which had been in doubt were established by Pasteur. It was definitely shown that rabies is always an "inoculated" disease—that is to say, is communicated from one animal to another or to man directly, through a wound which is usually made by the teeth, the infective matter being the saliva, which contains the virus. The notion that rabies could be communicated by the bite of a dog which was healthy, but had been driven by fear or violence

into a state of fury, was shown to be erroneous, as also the supposition that some wild animals, such as the skunk, could by their bite produce rabies although themselves free of the disease. All warm-blooded animals (even birds such as the common rooster) are susceptible. Dogs are most frequently affected, and are by far the most frequent source of the disease not only for man, but for all other animals, and to them we owe its perpetuation. But it is not infrequent among wolves, foxes, hyænas, jackals, and skunks. Cats are more rarely affected. Cattle, swine, horses, and deer are liable to it—in proportion as they are living in conditions where dogs are numerous and a rabid dog may gain ready access to them.



AT THE WORLD-FAMOUS CENTRE OF ANTI-RABIES TREATMENT: THE STATUE OF THE SHEPHERD JUPILLE AT THE PASTEUR INSTITUTE IN PARIS.

Baptiste Jupille was a shepherd boy who saved his comrades by killing a mad dog, which bit him. His was the second case Pasteur treated, and he is now door-keeper at the Pasteur Institute. Pasteur's first anti-rabies experiment on a human being was made on an Alsatian boy called Joseph Meister. Huxley said that the money value of Pasteur's discoveries, on beer-fermentation, silk-worm disease, chicken cholera, and anthrax, covered the cost of the French war indemnity of 1870.

Not every person bitten by a rabid dog becomes infected. The probability of infection depends on the position and depth of the wound inflicted, and the greater or less protection afforded by the hair, the thick skin, or the clothing. Bites on the head and neck are five or six times more dangerous than those on the limbs; partly because they are nearer to the brain and spinal cord, partly because they usually imply a more violent assault and that the head and neck are in man less generally protected by clothing. It is on this account that the bites of rabid wolves are more frequently followed by infection of the disease than are those of dogs. It has been estimated in a rough way (which has very little value) that one in every six persons

examined and certified as having been "bitten" by an animal more or less vaguely declared to be "rabid" contracts the disease. Such estimates confessedly do not exclude cases where, after all, the attacking animal may have been erroneously supposed to be rabid, nor do they exclude cases in which the bite was superficial or free from all effective contamination by the saliva. It appears that if we consider only those cases in which the bite is deep and penetrating, and fully inundated by the rabid animal's saliva, infection and consequent death occurred in five cases out of six—before the introduction of the Pasteur treatment, and when there had been no local treatment of the wound. About half that number were infected in cases where the wounds had been cauterised. The wound which carries the infection must break the skin: the virus cannot pass through healthy skin. But it may be transmitted by the saliva deposited on a sore or broken skin by licking—and is, indeed, frequently so transmitted by dogs. The clothing of man protects not only by offering an obstacle to the teeth of a rabid animal, but by wiping the poisonous saliva from them. The same is true of the thick, hairy covering of many dogs and other animals. In India and hot countries where little or no clothing is worn, the frequency of infection following the bite of a rabid dog is much greater than in Europe. Children also, for a similar reason, are more liable to infection.

Rabies occurs in every part of the world—from the sub-arctic regions of Canada and Russia to the tropics, from the temperate climes of Europe, the United States, and Japan, to the sun-burnt plains of China and India. Australia is the only country known to be exempt, and this is owing to the fact that a rigidly enforced quarantine is there applied by the Government so as to exclude the entry to its territory of dogs or other animals suffering from the disease. For a similar reason Britain was free from it from the year 1902 until the breaking-down of our quarantine system by the heedless introduction of pet dogs either in aeroplanes or concealed among the crowds of repatriated soldiers within the present year. Let us see what the quarantine system had done for us, and what we may hope soon to see it doing again. When Pasteur had established his system of treatment of persons bitten by rabid dogs—a matter to which I will revert next week—English patients threatened with the disease were frequently sent to Paris and treated free of all charge in the "Institut Pasteur." The Lord Mayor, Sir James Whitehead, when on an official visit to the Exhibition in Paris in 1889, at my suggestion inspected the Institut Pasteur, and on his return asked me to assist him in organising a meeting which he called at the Mansion House for the purpose of raising a sum of money to be used partly as a gift to the Institut Pasteur in recognition of the services rendered by it to British subjects, and partly as a nucleus for the creation of a fund sufficient to erect and maintain an institution in London similar to the Pasteur Institute of Paris. A great deal of interest and enthusiasm was thus aroused, and a fund established and employed as above indicated. Around that nucleus large donations accumulated, and the present Lister Institute in Chelsea Gardens, where various infective diseases are studied, is the fortunate result. (To be continued.)

NOTE.—Our usual "Science Jottings" will be found on pp. 802, 804.

A NEW MONSTER OF THE DEEP: A BIG GUN FIRING HALF-SUBMERGED.

DRAWN BY FRANK H. MASON.



WITH ITS HUGE MUZZLE JUST EMERGING ABOVE THE WATER: THE 12-INCH GUN OF A BRITISH SUPER-SUBMARINE FIRING AS IN ACTION.

The super-submarine, carrying a 12-inch gun, was one of those new leviathans of the British Navy which were completed just too late to take an actual part in the war. When the submarine goes into action, the enormous gun is canted to an angle of, roughly, 45 degrees or so, and delivers a shell with a high trajectory, the muzzle of the gun being

just clear of the water when the submarine is submerged. The huge vessel then rises to the surface to reload, performing this operation and submerging again for the next shot in the almost incredibly short space of 30 seconds. The new gun is a masterpiece of design and construction.—[Drawing Copyrighted in the United States and Canada.]

THE WORLD OF FLIGHT

ON RECONSTRUCTING THE ROYAL AIR FORCE.—II.

By C. G. GREY,
Editor of "The Aeroplane."

OF late one has heard that in the selection of candidates for permanent commissions in the R.A.F., the officials who have been responsible for the selection have been asking candidates whether they can play polo, whether they have private incomes in addition to their pay, whether they go in for shooting, fishing, golf, and so forth. The result has been that many candidates for permanent commissions seem to have got the impression that it is the intention of the high authorities to confine permanent commissions in the R.A.F. to well-to-do youngsters of the class which would, before the war, have joined the more expensive cavalry regiments. One does not, however, believe that such is at all the intention of the authorities. It seems quite true that such questions have been asked; but one is under the impression that these questions, possibly put somewhat tactlessly, or, at any rate, without explanation, have been merely a part of the general scheme (indicated in the last of these notes) to raise the social and moral tone of the R.A.F. by getting into it officers of the kind who love manly outdoor sports.

The mere idea of playing polo suggests to the ordinary youngster the keeping of a whole stud of expensive ponies costing between one hundred and two hundred guineas apiece. Quite possibly the question which has frightened so many candidates for commissions may have been put perfectly innocently merely because the questioner himself happened to be a keen polo player, and had the intention of marking down any polo players whom he could find in the Air Force for appointment to any Station which he himself might command in the future; just as one has known officers in the Air Force, when enlisting mechanics, to ask them whether they were keen on boxing, so that they could ear-mark them for their own units when once enlisted. As a matter of fact, polo is not such an inordinately expensive game when played as is ordinarily the method in the Army; though naturally, when a young millionaire takes to paying fancy prices for polo ponies, it can become as expensive as yachting. One has even known many cases in which well-to-do officers in marching regiments have spent their own money on ponies, and have induced their less wealthy brother officers to play polo by the simple process of mounting them on their own ponies. It is quite conceivable that such things might happen in the peace-time R.A.F. of the future, and it would certainly be a great day for the Royal Air Force when an R.A.F. polo team beat the polo team of any representative regiment of the Army. One has only to imagine such an event, and the immediate difference it would make to the whole social standing of the Royal Air Force, to be able to form a fairly just estimate of what the standing of the Royal Air Force is to-day.

Similarly the mere suggestion to an R.A.F. officer that he should be keen on shooting or fishing does not, one imagines, imply that he will be expected to rent a grouse moor or a deer forest in the season, nor that he will be expected to take an expensive fishing in Scotland. Probably what is in the mind of a selection officer asking such a question is the

idea that the R.A.F. officer of the future when going off his Station on the humble necessary motor-bicycle, whether for a few hours' leave or for the week-end, should do so accompanied by his gun or fishing-rod, rather than by the girl from the nearest cigarette-shop sitting on the carrier over the back wheel—which is commonly known as the "Flapper Bracket." Few people



STEEPLEJACKS OF THE AIR: AN EXPERIMENT IN MAST-MOORING A BRITISH DIRIGIBLE.

The photograph shows men examining the attachment after the moored dirigible has had a rough day in the wind. The airship swings on its pivot, like a weathercock.

Official Photograph from the "War in the Air" Exhibition.

will dispute the fact that the open-air type of man who shoots and fishes and hunts is a better man in every way, and is more likely to make a first-class officer and leader of men in time of war, than



MAST-MOORING FOR BRITISH DIRIGIBLES: AN EXPERIMENTAL AIRSHIP BEING HAULED TO THE MOORING TOWER.

Attached to the mooring tower, as shown in the other photograph, dirigibles have ridden through winds of fifty-two miles an hour.

Official Photograph from the "War in the Air" Exhibition.

is the type of man whose only idea of amusing himself when off his Station is to hog along the road on a noisy motor-bicycle or an imitation

racing car accompanied by feminine companions of questionable social status, or to go into the nearest town and there spend his time in the local hotel drinking and smoking and playing billiards, or sit in a stuffy cinema palace or a bun-shop till it is time to go back to his Station again. One can scarcely imagine the officers of the King's Navy or of the old Army taking their pleasures in such a sad and unseemly fashion, and one hopes that ere long it will not be possible to level such a reproach against the officers of the R.A.F.

One has even heard people who own nice places in the country in the vicinity of R.A.F. Stations express horror at the mere idea of asking the officers from the local aerodrome to their houses; yet those same houses were very well accustomed to visits from the officers of the Navy, and of the old Army, before the war. It is to be hoped that ere long R.A.F. officers will be equally welcome at the great houses of England. One might, perhaps, even suggest that if the best people do not take the young R.A.F. officer in hand, the young R.A.F. officer must, in the search for human companionship, naturally gravitate to the lower social strata, and that therefore it is rather the duty of the best people in the country to take the young R.A.F. officer of the present in hand, so that he may become in the future what the Army officer was before the war. And thus by raising the *esprit de corps* of the R.A.F. through the encouragement of sport, and by raising the social status of the R.A.F. by the very simple process of being kind to young officers, it should be possible in a very few years for the R.A.F. to rank with, but not after, the Senior Services.

Certainly every effort is being made to reform the R.A.F. by the process of demobilising all but the most desirable officers. It may seem hard that a youngster who has fought gallantly during the war should be turned out into a cold and unsympathetic world, not merely to earn a living, but to begin to learn how to earn a living. Yet such action is inevitable if the R.A.F. is to become worthy to rank with the other Services, and if the Treasury—in its concern for the housing of the working class, the reform of industrial conditions, and so forth—refuses to allocate enough money to maintain a big Air Force. Out of the 32,000 officers in the R.A.F. at the signing of the Armistice, perhaps 10,000 wanted to be demobilised at once and get back to their jobs. Of the remaining 22,000 at least 15,000 have had to go, whether they liked it or not. And the remaining 7000 or so—when finally selected—should represent the pick of the active-service officers of the R.A.F. These should also be the pick of the youth of the nation. Many really good men must go, more is the pity. Here and there mistakes may be made, and the wrong men may be retained, while better men are demobilised. No system of administration is perfect. But, judging entirely from what one sees from the outside—albeit at pretty close range—there is no doubt that before many years have passed the whole tone of the R.A.F. will be altered, and that it will become a Service to which any man may be proud to belong.

THE THIRD ANNIVERSARY OF JUTLAND: NEW PHOTOGRAPHS.

PHOTOGRAPHS SUPPLIED BY C.N.



THE "LION" (ON LEFT) TURNING NORTH TO LEAD THE GERMAN BATTLE FLEET TOWARDS THE BRITISH BATTLE FLEET.



JUST AFTER "INDEFATIGABLE" SANK: THE CLOUD OF THE EXPLOSION AND (LEFT) A BRITISH SHIP WHICH HAS JUST PASSED THE SPOT.

These remarkable photographs were taken during the Battle of Jutland, which began at 3.48 p.m. May 31, 1916, when Admiral Beatty, flying his flag in the "Lion" as commander of our battle-cruiser fleet, steaming south, engaged the German battle-cruisers. "At about 4.6 p.m.," writes Lord Jellicoe in his book, "The Grand Fleet, 1914-16," "the 'Indefatigable' was hit . . . by several projectiles of one salvo; an explosion followed (evidently that of a magazine) and the ship fell out of the line, sinking by the stern. She was again

hit by another salvo forward, turned over and sank." At 4.38 p.m. the enemy's Battle Fleet was sighted, steering northward, and four minutes later Admiral Beatty altered course and turned his own ships northward, to lead the enemy toward the British Battle Fleet under Admiral Jellicoe. The upper photograph was taken just after the "Lion" had turned north. The ship in the centre, the second of the line, had not yet turned, and is seen head-on, "straddled" by enemy salvos.

THE BATTLE OF JUTLAND: PHOTOGRAPHS TAKEN DURING THE ACTION.

PHOTOGRAPHS SUPPLIED BY C.N.



WITH HER MIDSHIP TURRET ON FIRE: H.M.S. "LION" JUST AFTER BEING HIT BY A SHELL—AND (ON THE LEFT) BRITISH DESTROYERS.



PHOTOGRAPHED FROM A BRITISH DESTROYER DURING THE BATTLE OF JUTLAND: A SHIP (AT PRESENT UNIDENTIFIED) SUSTAINING A HIT FORWARD.

Our photographs naturally show British losses in the action, and not those of the enemy. At Sydney the other day, Lord Jellicoe said he doubted whether we should ever know the full extent of the German losses in the battle. During the night that followed it, he mentioned, British destroyers took a heavy toll of the enemy's ships. The upper photograph here shows, on the left, part of the 13th British Destroyer Flotilla, working ahead of our battle-cruisers to attack the German battle-cruisers with torpedoes. In the

centre is the battle-cruiser "Lion" just after being hit by one shell of a salvo on her mid-ship turret. The remainder of the salvo is seen falling in the water to the right. The mid-ship turret has just caught fire, the smoke obscuring the interval between the funnels. The shell had pierced the roof and ignited the cordite inside. The magazine was just flooded in time by Major Harrey, R.M.L.I., who died from the effects of burns sustained during his heroic efforts, and to whom a posthumous V.C. was awarded.

THE BATTLE OF JUTLAND: A PHOTOGRAPH HITHERTO UNPUBLISHED.

PHOTOGRAPH SUPPLIED BY C.N.



THE "LION" WITH GERMAN SHELLS BURSTING AROUND HER: ADMIRAL BEATTY'S FLAG-SHIP, DURING THE BATTLE OF JUTLAND—
PHOTOGRAPHED FROM A BRITISH DESTROYER.

Describing the Battle of Jutland, fought on May 31, 1916, Lord Jellicoe says in his book, "The Grand Fleet, 1914-16": "At 3.48 p.m. the action between the battle-cruisers began at a range of about 18,500 yards, fire being opened by the two forces almost simultaneously. At the commencement the fire from the German vessels was rapid and accurate, the 'Lion' being hit twice three minutes after fire was opened, and the 'Lion,' 'Tiger,' and 'Princess Royal' all receiving several hits by 4 p.m.; observers upon our own ships were of opinion that our fire was also effective at that stage. At about

4 p.m., it was evident by the accuracy of the enemy's fire that he had obtained the range of our ships, which was then about 16,000 yards. . . . The 'Lion' received several hits, the roof of one of her turrets being blown off at 4 p.m." The photograph here reproduced was taken shortly before the "Queen Mary," one of the British battle-cruisers, was hit and blown up, an event which took place at about 4.26 p.m. A photograph of the actual explosion is given on our double-page in this number. The "Lion" was the flag-ship of Sir David Beatty, who commanded the battle-cruiser squadron.

THE BATTLE OF JUTLAND: THE DESTRUCTION OF THE BATTLE-CRUISER "QUEEN MARY"—AN UNPUBLISHED PHOTOGRAPH.

PHOTOGRAPH SUPPLIED BY C.N.



AT THE MOMENT OF THE DISASTER: H.M.S. "QUEEN MARY" BLOWING UP; AND (ON THE LEFT) H.M.S. "LION" WITH GERMAN SHELLS FALLING AROUND HER—
PHOTOGRAPHED FROM A BRITISH DESTROYER.

The loss of the "Queen Mary" at an early stage in the Battle of Jutland, on May 31, 1916, is described by Lord Jellicoe in his book, "The Grand Fleet, 1914-16." The Battle-Cruiser Fleet was commanded by Sir David Beatty (flying his flag in the "Lion"), afterwards Lord Jellicoe's successor in the chief command. The battle-cruiser action began at 3.48 p.m., and, as mentioned on our other page, Lord Jellicoe describes the enemy's fire at first as "rapid and accurate." At 4.6 p.m. the "Indefatigable" went down. "At about 4.26 p.m.," writes Lord Jellicoe, "a second disaster befell the British battle-cruisers. A salvo fired from one of the enemy's battle-cruisers hit the 'Queen Mary' abreast of 'Q' turret, and a terrific explosion resulted, evidently caused by a magazine blowing up. The 'Tiger,' which was following close astern of the 'Queen Mary,' passed through the dense cloud of smoke caused by the explosion, and a great deal of material fell on her decks, but otherwise the

'Queen Mary' had completely vanished. A few survivors from this ship and from the 'Indefatigable' were afterwards rescued by our destroyers." The "Queen Mary" was commanded by Captain C. I. Prowse and the "Indefatigable" by Captain C. F. Sowerby. The above photograph, it should be mentioned, is a composite one; that part of it showing the "Lion" having been taken shortly before the destruction of the "Queen Mary." The composition was arranged to show the height of the column of smoke thrown up by the explosion—over 2500 ft. The length of the "Lion" is 770 ft. The Battle of Jutland has since been the subject of much controversy among naval critics. Lord Jellicoe ascribes the British losses partly to inferiority of protective armour as compared with the German ships, and partly to the fact that the enemy had better armour-piercing shells. The deficiency in armour protection, he points out, was due to the lack of dock accommodation before the war.

THE THIRD ANNIVERSARY OF JUTLAND: A GREAT BRITISH SAILOR.

PHOTOGRAPH BY SPEIGHT.



IN COMMAND OF THE BATTLE-CRUISERS AT JUTLAND AND AFTERWARDS COMMANDER-IN-CHIEF OF THE GRAND FLEET:
ADMIRAL-OF-THE-FLEET SIR DAVID BEATTY, G.C.B., G.C.V.O., D.S.O.

The Battle of Jutland, in which Sir David Beatty so greatly distinguished himself as Commander of the 1st Battle-Cruiser Squadron, was fought on May 31, 1916. The date of this number consequently coincides with the third anniversary. Admiral Beatty last month hauled down his flag as Commander-in-Chief of the Grand Fleet, in which post he succeeded Lord Jellicoe. Interest in the greatest naval action of the war has rather increased than abated since it took place, and the strategy employed has been the occasion

of much controversy. New light on the subject was thrown by the publication, last February, of Lord Jellicoe's book, "The Grand Fleet, 1914-1916," and a few weeks ago an interesting German account of the battle was given in a review of Lord Jellicoe's work written by Vice-Admiral Paul Behncke, who commanded the 3rd Squadron of the German Fleet in the action. He calls it the Battle of the Skagerak, and, as might have been expected, he claims it as a German victory.



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THE GERMAN EMPIRE.

WE are now treated to the second and final volume of Mr. Harbutt Dawson's "German Empire, 1867-1914," (Allen and Unwin), as produced on the lines of its predecessor. For one thing, it is a model of compression in the style of the "Annual Register," rather more dry than dramatic; though some 500 octavo pages offer but pinched accommodation for the facts and figures of such a crowded story as that of William the Second's inheritance. Mr. Dawson, in his Preface, might well have quoted Shakespeare's prologue to "Henry V.," and his reference to the Globe Theatre in Southwark—

Can this cockpit hold
The vasty fields of France? or
may we cram
Within this wooden O the very
casques
That did alright the air of
Agincourt?

The result is that Mr. Dawson's chronicle is little better than what might be called a charnel house of events—quite decent and orderly, but still smelling of the tomb; and, moreover, he breaks off just where he begins to be vitally interesting—at the rising of the curtain on the tremendous drama of the world-war, its causes and consequences. "Out of the Balkan dispute had thus grown a world-war: but of this unparalleled catastrophe the Balkan dispute was not the cause but only the occasion." What a pity that Mr. Dawson could not, or did not, see his way to devoting his critical faculty, his painstaking power of research, and, above all, his sense of fairness and his gift of accuracy, to a consideration of the real causes of the war, even if that would have required a volume all to itself!

The history of the German Empire, as he conceives it, really comes to a close with the conclusion of the Armistice and the flight of the Kaiser. Therewith we have a proper and natural drop-curtain scene, as in the case of Richard's fall on Bosworth's field. Nor does Mr. Dawson assume the rôle of a prophet beyond rather timidly saying, "It is justifiable to believe

of a new and, let us hope, a brighter era of European and world civilisation."

Here Mr. Dawson seems to use the word "Empire" in the sense current among the republicans of the present Government at Berlin—not as a federal State with a nominal Emperor, or Kaiser, for its executive Chief, but as a rendering of the word "Reich" which simply means "realm," while "König-reich" is a kingdom, and "Kaiser-reich"—an Empire in the full meaning of the term. When the politicians of Berlin continue to talk of an "Imperial Government," all they mean is a "Realm-Government," which connotes "Republic."

In the same loose way Mr. Dawson speaks of Alsace-Lorraine as being formerly under a "Stadholder," which is the Dutch form of the German "Statthalter," this being an exact transliteration of "Lieutenant," "Viceroy," or holder of an office in place or instead of another—the English root "stead" being the same as the German "Statt."

These are questions of mere words, like Mr. Dawson's misquotation of Schiller and the "Moor" in reference to Bismarck's dismissal; but, after all, they do not affect the general merit of his narrative, which is singularly accurate and just, though rather dry and dusty, like pemmicanised beef. The truth is that public interest in German history has been seriously impaired by the growing lack of sympathy with the German people and abhorrence of their acts and aims, and it will be long before they can ever get another Carlyle.



A RED-LETTER DAY AT ETON: CHEERING THE GENERALS.

On Tuesday, May 20, General Plumer and several old Etonians, who are now leaders in the Army, visited Eton College. Our photograph shows the enthusiastic reception given to them by the Etonians of to-day.—[Photograph by L.N.A.]

that, under whatever form of government the nation may choose to live henceforth (for the choice for the first time in its history is in its own power), the Empire will continue; nay, more, that it will be strengthened in the end rather than weakened, by renovation and adaptation to the imperious demands



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THE "SHELL" THAT HIT GERMANY HARDEST*

IT was the privilege of "Shell" to figure in two of those great crises which governed the entire course of the war:—

THE HIGH EXPLOSIVES CRISIS.

—"But for toluol, the war would have been lost," declared M. Bérenger, Commissioner - General of Petroleum in France. It is toluol that gives its name to the T.N.T. (Trinitrotoluol) which was so extensively used by the Allies for shells, mines and bombs. Approximately 80 per cent. of Britain's entire output of toluol in the critical year of 1915 was supplied by "Shell." Addressing the Institute of Petroleum Technologists at their Annual Dinner some months after the armistice, Sir Frederick W. Black, K.C.B., referred to the "Shell" group as having given us that valuable product toluol, from Borneo petroleum, without which we could not have defeated the enemy.

THE TANK TONNAGE CRISIS.

—In the tank tonnage crisis of 1917, when all the vessels of the British Navy were wholly dependent upon liquid fuel, and the exercises of the Grand Fleet had to be curtailed on account of the acute shortage, "Shell" placed before the Admiralty the proposition of bringing liquid fuel from abroad in the "double bottoms" or ballast tanks of ordinary merchant ships, and, at the request of the Admiralty, "Shell" undertook the entire work of conversion. No fewer than 1,280 vessels were so converted, and 1,014,570 tons of liquid fuel were by these means brought over by the date of the armistice, as a result of which the entire situation was saved. The tonnage represented by this enterprise was equivalent to a new fleet of a hundred oil tankers.

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"The 'Shell' that Hit Germany Hardest," an illustrated brochure by P. G. A. Smith, tells the complete war romance of "Shell." A copy gratis from "Shell" Marketing Co., Ltd., Parker Street, Kingsway, London, W.C. 2.



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LADIES' NEWS.

THE Flower Show last week in the grounds of the Royal Hospital, Chelsea, was a real sign of the relief with which society is returning to its pre-war ways. We have only been three seasons without the R.H.S. big floral displays; because we love them so much, it has seemed more. Queen Alexandra looked well as she walked round, her arm in that of the Empress Marie Feodorovna, whom she seemed pathetically anxious to interest. The new Maid-of-Honour, Miss Lucia White, was in attendance; also the veteran Lady-in-Waiting, the Hon. Charlotte Knollys, and that other veteran of Queen Alexandra's Household, General Sir Dighton Probyn, V.C. The Countess of Gosford, too, was in attendance, and all seemed to delight in the show. There were some pretty and some striking dresses. Lady Northbrook wore one of the former category in dove-grey silken voile; while a small toque was of black taffeta piped with jet and veiled with tulle. Lady Ward, wife of the Hon. Sir John Ward, who was with her, wore a black crêpe-de-Chine dress, the hemstitching done in creamy white, and a vest of tangerine chiffon making a pretty contrast. A large black hat of rather coal-scuttle type was worn; and pearls large, numerous, and most lovely. Princess Antoine Bibesco was enthusing about the orchids; and Mrs. Asquith paid the Show a flying, but not an aeroplane, visit. It would be easier to say who was not there of well-known people on one or other of the days than who was. Flowers are an unfailing attraction to the classes and to the masses.

No Courts this season, and instead thereof a series of garden-parties at Buckingham Palace. Some time back I foretold a substitution of some kind for Presentation at Court. It seems that a remarkably pleasant one has been found, particularly if the weather is to fulfil its promise and keep in its good ways. Garden-party dresses come into the financial possibility of all. Very many more presentations can be made by attendance at such a function than by personal passing the Presence at a Court. Of course, there are grumblers; curiously enough, those I have come across are not the old brigade who attended Courts ever since they were instituted, and Drawing Rooms before that, but those who had seldom or never been to one of the evening functions at Buckingham Palace. This is easy to understand, for a garden party, although a prettier and a pleasanter affair, cannot be so formal, stately, or brilliant. The general idea among those who know is that Courts have passed for ever; that one may take place each year for Diplomats, but even that is regarded as uncertain. Many there be that believe that

the Royal Enclosure at Ascot is also likely to be abandoned and the paddocks and lawn made to do for all. This year there is uncertainty about the meeting. It will be held,



A GARDEN JUMPER.

It is made of brightly coloured cretonne, edged with plain rose colour. The girdle is rose colour too, and is run through rings of ivory. A garden bonnet, with frills of pleated muslin and rose ribbons, completes this costume.

but should peace terms not be signed before June 17 there would be no Ascot State attendance by their Majesties.

There are concerts and concerts. That arranged by Lady Maud Warrender which took place last week in the

ball-room of Lady Ancaster's house in Rutland Gate was really enjoyable; not a long programme, but a lovely one. It was for an Embroidery Industry for totally disabled Soldiers and for the War Fund of the Friends of the Poor. A most attentive and, be it said without any loyal exaggeration whatever, a delightful-to-look-at member of the audience was our young Princess Mary, who was wearing hydrangea-blue chiffon, with a wide-brimmed tulle and chiffon hat to match, the crown surrounded by little flattened pink roses. A double row of pearls was worn and no high collar obscured the lines of a girlish neck and the poise of a neat head. Lady Joan Mulholland was in attendance. Princess Marie Louise, President and Founder of the Friends of the Poor, was also present, attired in dark-blue taffeta, and wearing a shiny black straw hat trimmed with blue glycerined feathers. The remainder of the audience was most brilliant; three Duchesses, some Marchionesses, Countesses, and lesser luminaries of the noblesse gave themselves up to the pleasure of good music in an excellent cause, the result reaching somewhere between £500 and £600.

Pearls are without doubt the gems of the day; they are what every woman wants. So great favour has been gained by the famous *Ciro* pearl—a wonderful reproduction of the work of the oyster to repair its shell which results

in the gems worth many, many pounds each—at one guinea for a string, or a ring, or a pin, or ear-rings, or a brooch, that *Ciro* has moved into very fine new premises, 39, Old Bond Street. They are very handsome and artistic salons. The marble entrance is refreshing on a warm day, and leads to a stairway done in Wedgwood grey and white. The suite of rooms on the first floor is lofty and spacious; the decorations are lovely—one room hedge-sparrow blue, the Adam mouldings done white; another room has Parisian striped wall-covering in deep rich colours; a third

is *Empire* in style and soft green in colour, with gilt moulding. Above are spacious work-rooms: so the famous *Ciro* pearl is adequately housed.

Is tea any better in a historic room than in a common-place apartment? On a day of uninterrupted sunshine, after a walk through a lovely if somewhat gritty park, tea in Mrs. Hornby Lewis's shady and handsome flower-filled drawing-room would have been delightful in any case. That it is the room in which Disraeli gave a dinner to his

(Continued overleaf.)

Suits Wanted in a Hurry

Whether it be a practical outrig for fishing or golfing, a lounge suit, flannels, a morning jacket or evening dress that is required

BURBERRY COMPLETED SUITS

successfully solve the most difficult of clothing problems—the production of suits that will satisfy the most critical taste, and at the same time be

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WE have an excellent range of dresses which are cut from the very latest Paris models, suitable for every place and occasion, and made in a great variety of charming colours that you will be able in every way to satisfy your desires.

Our Summer List sent Post Free.

No. I.L.N. 113.—Morning Dress in new plaid design, zephyr collar, cuffs, and pocket trimmed white. Stocked in a good variety of colours
Price 29/11

No. I.L.N. 66.—Dress in cotton Georgette, new round neck, embroidered in coloured silk and velvet tie. Skirt with deep tuck. Pastel colourings ... 73/6



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is cool in Summer and warm in Winter

because of the non-conducting air in the meshes of the fabric, and, being woven on a loom (not knitted on a frame) it is stronger than ordinary hosiery underwear. AERTEX CELLULAR GARMENTS are cut and fashioned on tailor-made principles, and are therefore durable, easily repaired if damaged in the wash, and economical in wear.

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Oliver Bros., Ltd., 417, Oxford St., W. 1
ABERYSTWYTH—Arthur Owen, 5, Chillyheate St.
ALTRINCHAM—Taylor & Cross, Stamford New Rd.
BARNESLEY—Turner & Charlesworth, Chapmole,
BIRMINGHAM—E. C. Pope, Villa Rd., Hildsworth.
BLACKPOOL—J. Whitehead, Abingdon St.
BOSTON—E. H. Shepherd, 44, Market Place.
BRIGHTON—G. Osborne & Co., 50, East St.
CAMBRIDGE—W. Eaden Lilley & Co., Ltd.
CARDIFF—David Morgan, Ltd., The Hayes.
CARLISLE—G. Twiddle, 25, Devonshire St.
CREWE—J. R. Kilner, 13, Earle St.
DEAL—Pitcock & Son, High St.
DONCASTER—Doncaster Clothing Co., Baxter Gate.
DUBLIN—Kennedy & McSharry, Westmoreland St.
DUNDEE—A. Caird & Son, Reform St.
EASTBOURNE—Bobby & Co., 105, Tinnins Rd.
EDINBURGH—Jenners, Princes St.
GLASGOW—Paisley, Ltd., 82, Jamaica St.

GRAYSHOTT—F. Warr & Co.
GRIMSBY—J. W. Garrard, 102, Cleethorpe Rd.
HARROGATE—W. G. Allen & Son, Prospect Crescent.
HARROW—T. A. Stephenson, Broadway.
JARROW—H. Golder & Co., 75, Ormrod St.
KINGSTON-ON-T.—F. Harrison, 10, Thames St.
LEIGH (Lancs.)—Walter Ince, Bradshawgate.
LIVERPOOL—Wilkinson Bros., South Rd., Waterloo.
MANCHESTER—J. Macdonald, 11, Oxford St.
MIDDLESBROUGH—A. W. Foster, Linthorpe Rd.
NEWCASTLE-ON-TYNE—Emerson Robson.
NORTHAMPTON—Brice & Sons, Ltd.
NOTTINGHAM—A. H. Goodfellow, Ltd., 56, Clumber St.
OLDHAM—Buckley & Procter, Ltd.
OXFORD—Arthur Shepherd, 7, Cornmarket.
PRESTON—R. Lawson & Sons, Fishergate.
SHEFFIELD—Culver & Co., Market Place.
SOUTHPORT—T. H. Fowler, 431, Lord St.
STOCKPORT—W. C. Fleming, Underbank.
YORK—A. J. Watkin & Co., Ltd.



Cabinet after his return from Berlin and his "Peace with Honour" conference made it specially interesting at this juncture. In 29, Park Lane, the great statesman lived and wrote and worked for thirty years. But it was a tea with a purpose, and that not far removed from the Peace with Victory which we hope to celebrate so soon. The ladies of the committee of a ball to be held in the Hyde Park Hotel on June 2 for the Waifs and Strays met to talk it over with some Press representatives.



TO MARRY CAPTAIN MALCOLM BULLOCK IN JUNE: LADY VICTORIA PRIMROSE.

The wedding of Lady Victoria Primrose (whose husband was killed in the war in 1917) to Captain Malcolm Bullock, of the Scots Guards, is to take place, very quietly, in Paris, during the second week in June.

Photograph by Lillie Charles.

are puzzled what to do for the best. There are several things to consider—coolness, health, and the laundry difficulties, which seem to increase rather than diminish. On these counts, as on that of luxuriousness in wear and prettiness of appearance, Aertex Cellular Underwear is second to none. Owing to the principles of its weaving, it maintains normal temperature whether the wearer is taking violent exercise or not; it is porous, and a non-conductor of heat. Under-clothes, pyjamas, and blouses are all beautifully cut and well made, and nothing could be

Victory has placed heavy burdens on the Waifs and Strays Society, and it wants help. The ball is to be a really good one, with Newman's Band, and supper included for two-guinea tickets. Such well-known hostesses as Lady Huntington, Lady Lindsey, Lady Lowther, Hon. Mrs. Devereux, Lady Newnes, Lady Hulton, Mrs. Hornby Lewis, and others will take their parties. It is believed that it will be one of the nicest of all the balls since the Armistice.

We are now coerced into providing ourselves with summer clothes, and many

easier to wash than this clothing. Oliver Brothers, 417, Oxford Street, W.1., and Robert Scott, 8, Poultry, Cheap-side, E.C.2, are well-known retailers; but a full list of these will be sent on application to the Cellular Clothing Company, Ltd., 72-3, Fore Street, E.C.2.

Next week Lady Diana Manners will be married to Mr. Duff-Cooper, and will wear a home-made wedding dress, in the construction of which she has said that she is personally engaged. The train will require only arranging, but that will call for talent. In Lady Diana's case the call will not be in vain. It is to be composed of the veil worn by the Duchess of Rutland at her own wedding in 1882, and it may have been worn by her mother, who was one of the Brownes of Lord Kilmaine's family, and of the veil worn by the Duke of Rutland's mother at her wedding in 1851. She was the daughter of the late Colonel George Marlay, C.B., and she lived only three years after her marriage. The train will be a lovely one, and the dress will be mediæval and of embroidered cloth-of-gold. The two little sons of Lady Elcho and the little daughter of Lady Anglesey, nephews and nieces of the bride, will be the attendants. They are a trio of lovely children.—A. E. L.

The death has occurred in Pittsburg, U.S.A., of Mr. H. J. Heinz. He was an active philanthropist, and a generous supporter of the World's Sunday-School Union, of which he was Vice-President. As a man of business he was associated all over the world with the famous "57 Varieties," the development of which is one of the romances of business life.

Now that the war is over it is well to recall that the prism binoculars made by Messrs. W. Watson and Sons, Ltd., 313, High Holborn, W.C.1, are now again obtainable by the public. Moreover, the firm has just issued a new, fully illustrated, and very informative price-list. Some 30,000 of these binoculars were supplied for war use, and of their value there can be no doubt.

Now that summer has come in with its glorious promise the important question of agreeable and health-giving beverages is of real importance. Fortunately, the problem of pleasant and health-giving waters may be solved by the purchase of the famous "Burrow's Malvern Table Waters," which by their purity and softness have real health-restoring powers. A price-list and illustrated booklet will be sent on receipt of an application by Messrs. W. and J. Burrow, Ltd., The Springs, Malvern. Messrs. Burrow also make a ginger ale, lemonade, and tonic water of the finest quality and value. Messrs. Burrow will send

the address of the nearest retailer, if desired, on receipt of an application.

All information concerning our Embassies and Legations abroad, and the representatives of other countries accredited within the British Empire, is to be found in the "Foreign Office List and Diplomatic and Consular Year-Book" (Harrison and Sons). The new edition for 1919, recently published, contains all the customary features of this very useful book of reference, including the biographical record of all living members of the diplomatic and consular services, arranged in alphabetical order. There are also maps, Acts of Parliament, Orders in Council, and other Regulations, and an obituary.



TO RUN A CAFÉ IN THE STRAND—ON CONTINENTAL LINES: LADY LIMERICK.

The Countess of Limerick intends to open a café in the Strand, on Continental lines—inexpensiveness and a varied menu at moderate prices. She is satisfied that the institution will be both welcome and profitable. Before her marriage, Lady Limerick was Miss May Irwin, daughter of the late Mr. Joseph Burke Irwin, formerly Resident Magistrate, of St. Helen House, Drogheda.—[Photograph by Vandyk.]



SUMMER WRAPS IN SILK GEORGETTE

Suitable for Afternoon or Evening wear. These wraps are exclusive designs and are made in our own Workrooms from rich quality materials.

AFTERNOON WRAP, in best quality black georgette, with yoke and loose fronts, finished with five rows of silk fringe.

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THESE inexpensive Breakfast and Tea Frocks are designed to meet the demand for simple and useful Gowns for Country and House-boat wear.

They are made to slip over the head without any fastenings, in soft Cretonne with white Pique Collar and Cuffs, finished self sash to go twice round the waist.
In Pink, Blue and Mauve.

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Pears

SCIENCE JOTTINGS.

THE PERSONAL EQUATION.

THE visitor to an observatory who offers, greatly daring, to help the astronomers in their observations is apt to be brought up, all standing by the demand for his "personal equation." This is, he will find on inquiry, the time that it takes him to record the exact moment when he perceives anything, even by such simple means as pressing a button—or, in other words, to translate thought into action. He will also find, if he presses his inquiries further, that this varies very considerably in different individuals, and that it can be ascertained with such accuracy that a figure representing its average for every observer has to be deducted from every record of the movement of the heavenly bodies noted by him. As may be expected, it is higher with old observers than with young ones, and, it is said—but the statement lacks confirmation—with women than with men. Small as it is, not amounting to more than several thousandths of a second, even so small an error makes a considerable difference when it comes to be multiplied by the high figures involved in measuring, say, the parallaxes of distant stars, whose light takes thousands of years to reach us.

Yet the personal equation enters into other matters which at first sight are more closely concerned with our daily lives than the movements of the stars. Shorthand-writing or tachygraphy, which the war has introduced to thousands who have hitherto ignored it, depends very largely on the

personal equation for its efficiency, some experts being able to record spoken words at 180 per minute, while many stumble along at a bare 100. So too in type-writing, where the minimum speed

demanded of the aspirant—in theory, at any rate—is 60 words a minute, and some skilled typists can manage to turn out copy nearly as fast as a shorthand-writer can take down the words.

Although several attempts have been made to replace both shorthand and type-writing by mechanical methods, none have yet proved satisfactory, and the business world will probably be dependent on the shorthand writer and the typist for a good many decades. What this means may be judged when we consider that the law "stationer," as he is called—or, in other words, the man who copies legal documents into fair and legible writing—even though paid by the piece and using phrases which constant practice has made familiar to him, can never exceed the pace of twenty words per minute. For all business purposes, it looks as if the long-hand writer were doomed.

In other occupations, too, the personal equation is daily rising into increasing importance. In motor-driving, the quickness with which the perception of danger ahead is translated by the driver into alteration of the direction or of the speed of the machine may often save a considerable number of lives; and, with the increasing multiplication of motor vehicles in our streets, this comes to play a larger and larger part in our daily risks. It is early times yet to speak of commercial as distinguished from military aviation; but if the aeroplane, and *a fortiori* the airship, come into daily use for the speedy conveyance of passengers and goods, the value of a pilot with

(Continued overleaf.)



WITH THE NORTH RUSSIAN EXPEDITIONARY FORCE: MEN OF THE R.A.F. BUILDING A HANGAR.—[Official Photograph.]



WITH THE NORTH RUSSIAN EXPEDITIONARY FORCE: THE ARRIVAL OF THE FIRST AEROPLANE, AT MURMANSK.—[Official Photograph.]

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Our Own Make Linen.
No. L.R. 36—Pure Irish Pillow Linens & Sheetings.
Very Strong and Durable:—

PILLOW LINENS.		SHEETINGS.	
	Per yd.		Per yd.
40 inches wide ...	8/11	72 inches wide ...	17/3
45 inches wide ...	9/11	60 inches wide ...	21/6
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PILLOW CASES.

19 1/2 x 30 inches ...	10s/6	PLAIN BOLSTER CASES.	Each.
22 x 36 inches ...	12s/6	10 1/2 x 60 inches ...	17/3

PLAIN HEMMED SHEETS.

2 x 3 yds. Per pr.	103/10	2 1/2 x 3 yds. Per pr.	129/4
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THE "BURLINGTON."
AN IDEAL EASY CHAIR THAT CAN BE INSTANTLY CHANGED INTO A SEMI OR FULL LENGTH COUCH.

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With Rolled Gold Clasp.
Price £1.1.0
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floor plan is such that we have now been compelled to move to very much larger premises, **BUT WE STILL HAVE NO SHOP.** We are continuing our plan of saving money for our customers, and according them the privacy of first-floor showrooms.

OUR UNIQUE GUARANTEE.

We will send you a Necklet, a Ring, or any of our Jewels on receipt of £1.1.0. Wear either for a week. Compare it with the finest of genuine pearls or the highest-priced artificial pearls. If you are not satisfied, or if your friends can tell it is not real, return it to us, and we will refund your money in full.

DESCRIPTIVE BOOKLET No. 16 ON REQUEST.

NOTE.—Our only address is 39, OLD BOND STREET, W.1 (just off Piccadilly), 1st floor only—we have no shop. Orders by post will have our careful intelligent service.

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INVALUABLE FOR TOILET AND
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Price 1/4 per Bottle. Of all Grocers, Chemists, Etc.

The public are cautioned against the many injurious imitations of "Scrubb's Ammonia" that are being offered, and attention is drawn to the signature of Scrubb & Co. on each bottle, without which none is genuine.

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SPAGHETTI à l'Italienne

THIS dainty dish is as welcome in the home as in the best hotels and restaurants. By housewives and chefs everywhere it is acknowledged to be the most delightful way of serving spaghetti.

The spaghetti itself is made from the best wheat flour. Then it is cooked with tomato sauce from fresh, ripe tomatoes, and a perfectly-balanced proportion of grated cheese.

And so, without trouble or risk of disappointment, you have ready to serve a savoury, appetising dish, nutritious and easily digested.

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You have only to heat the tin in boiling water for 20 minutes before opening.

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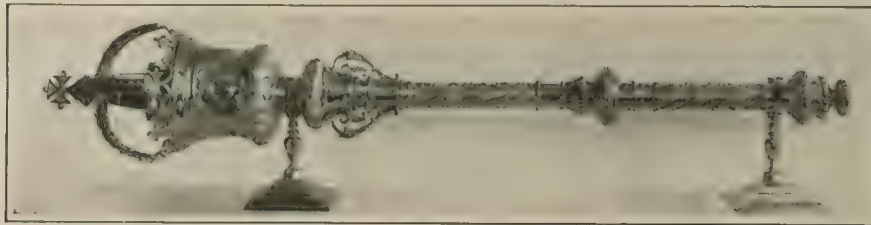
Continued.

a low personal equation may easily rise to be far above rubies. In military, and still more in naval, matters its importance is almost everything. The General or Admiral who could not depend upon his subordinates to turn thought into action with the least possible delay in the thousand-and-one emergencies with which they



AN INTERESTING SOUVENIR OF THE WAR: A TIME-PIECE MODELLED ON A FRENCH GUN.

This eight-day clock is a clever copy in gilt and bronze of a French 75mm. gun. It is 9½ inches in length, costs £14 14s., and is a product of the skill of Messrs. Mappin and Webb, Ltd. It can be seen in either of their well-known show-rooms—at 153-162, Oxford Street, W.; 172, Regent Street, W.; or 2, Queen Victoria Street, E.C.



A HANDSOME "PEACE" PRESENTATION: A SILVER-GILT CORPORATION MACE FOR ST. HELENS.

This handsome Mace bears the following inscription: "Presented to the Borough of St. Helens by Alderman James Crooks, J.P., 1919." The design is rich, elaborate, and artistic, and is carried out with their customary skill by the Goldsmiths and Silversmiths Company, Ltd., 112, Regent Street, W.1., who enjoy so wide a reputation for the design and production of presentation plate. It is given to the Borough "In Commemoration of Peace—European War—1914-1919."

must always be confronted would be beaten before going into action.

It behoves us, then, to see whether the personal equation of the average untried man cannot be improved. Much can certainly be done by training, for the agricultural labourer, accustomed from his infancy to the slow and deliberate movements forced upon him for the most part by plugging in heavy boots over soft ground instead of hard roads, no sooner gets into the Army than he becomes, under the inspiring tongue of the drill-sergeant, the smartest as he is always the steadiest and most trustworthy of soldiers. Nowhere is the low personal equation more needed than in that splendid corps the Royal Engineers, who are used to perform complicated and co-ordinated movements, such as those involved in throwing a bridge across a river under fire, in the shortest possible time. One might almost think



A SEAPLANE IN COLLISION WITH A PIER: A REMARKABLE ACCIDENT AT FELIXSTOWE.

A seaplane recently crashed into the pier at Felixstowe, and the occupants, Capt. Mann and Capt. Boyd, R.A.F., were injured, one breaking his collar-bone, and the other escaping with a few abrasions.—[Photograph by Harris Picture Agency.]

from these examples that it was entirely a question of training and nothing else, were it not for what we see in our games and sports. In games like tennis and racquets, the "stroke" is probably acquired by most players of sufficient physique in about the same space of time; but the speed, force, and placing of the return depend so much on the personal equation that there is absolutely no handicap possible between champions like Lambert and Pairs and the ordinary amateur. In fencing, perhaps the best of all games for training the eye and hand, there are not only born fencers who from the first show an aptitude that slower natures can never achieve, but the French—whose liveliness of temperament and other causes have endowed with a lower personal equation than any nation in Europe—are so easily first that their teams have never ceased to lead in all international competitions. Certainly, when all is said and done, a low personal equation is born with a man rather than acquired in after life.

F. L.

4

URODONAL

possesses **FOUR**
overwhelming advantages over other
methods of treating GOUT, RHEU-
MATISM, Lumbago, Sciatica, and
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- (1) It is a Scientific Remedy.
- (2) It has no harmful effects.
- (3) It is Speedy in action.
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Further, it compares *more than favourably* with hitherto recognised treatments, being *37 times more effective* as a solvent of uric acid than Lithia.

So many of the ills that human flesh is heir to owe their origin to an excess of uric acid, which poisons and clogs the system and prevents the organs from performing their normal function of "draining" the body of its acquired impurities. URODONAL, which is the result of years of expert research, goes to the root of the matter, and without pain or inconvenience dissolves the uric acid accumulations, and passes them out of the system in a natural way, thereby ridding the sufferer of the Cause of his troubles.

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Late Professor of General and Comparative Physiology at the "Ecole Supérieure des Sciences d'Alger."

JUBOL, price 5/- per box. (Complete course of six boxes, 29/6.) Prepared at Chatelain's Laboratories, Paris. Can be obtained from all Chemists, and Drug Stores, or direct, post free, 5/3 and 30/-, from the British and Colonial Agents, HEPPELLE, Pharmacists and Foreign Chemists, 164, Piccadilly, W.1., from whom can also be had, post free, the full explanatory booklets, "Scientific Remedies," and "Treatise on Diet."

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THE CHRONICLE OF THE CAR.

Motor-Car Lights in Parliament. To the ordinary person there seems to be no logical reason for the continuation of Defence of the Realm Act Regulation 1655, restricting the size of motor-car head-lamps. It was imposed during the war in order

by shading the top of the lamp. The rather futile answer was given that headlights above five inches diameter can actually be used, provided they are shaded as required by the Order, and do not exceed the prescribed limits of power. The Home Secretary, it was added, does not see his way to withdraw the restrictions at present. The whole question of the power of headlights, however, was under consideration, so that the regulations may be placed on a permanent basis. Undoubtedly, the regulations stand in urgent need of revision, and the sooner the better.

Cyclists and Rear Lights.

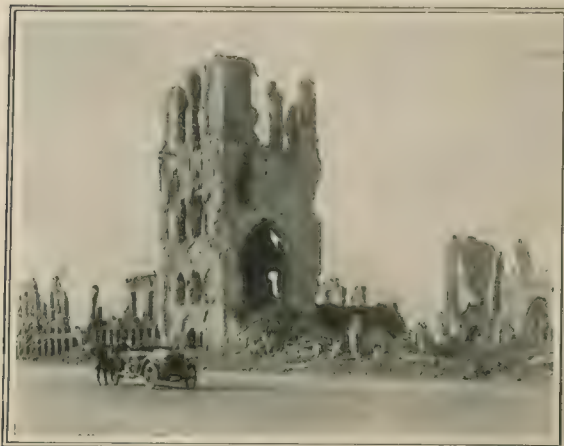
During the war cyclists were brought into line with other forms of wheeled traffic by being compelled, under a Defence of the Realm Act Order, to carry a red rear light. There seems now to be on foot an organised agitation to secure the abolition of this very salutary regulation; but exactly why there should be such an objection to the rear light I do not profess to be able to understand. Apparently, the agitation takes root in the belief that the regulation has been imposed at the behest of the motorist, who desires to compel the cyclist to carry a light so that he (the motorist) may be the freer to rush about the roads at quite unsafe speeds, to the inconvenience and danger of other users of the highways. As an old cyclist, I must say I cannot subscribe to this idea at all, and in any case I conceive that the rear light is an essential in the interests of the cyclist himself. If we could secure all the records of fatal and serious accidents to cyclists at night, in which the rider has been collided with by an overtaking car, we should find that all the evidence points to the majority of such accidents being caused by the absence of a rear light. Personally, I have always carried either a rear light or one of the effective reflecting devices which are the

next best thing, and I certainly would not cycle by night without one, whatever the state of the law might happen to be. To my mind, the agitation in question is about as illogical as need be. There is no doubt that the compulsory rear light on all vehicles has tended to make the roads safer after nightfall, and it is to be hoped the Home Office will not be so weak as to be persuaded to modify the regulations.

The Sale of Government Cars.

During the next few weeks or months there should be a great clearance of surplus Government cars. The Disposal Board has taken a tenancy of the Agricultural Hall for three months, and intends to conduct auction sales of cars regularly, the first of which was held on Saturday last. Whether the high prices hitherto realised at the few relatively small sales held by the Board will continue may be doubtful. Possibly, when it is known that large numbers of cars are to come under the hammer, the purchasing public will be a little more aloof than they have been. At the same time, the famine in cars is so acute, and the prospects of early delivery of new vehicles so

(Continued overleaf.)



VISITING THE RUINS OF A WORLD-KNOWN BUILDING: A VAUXHALL AT THE WRECKED CLOTH HALL, YPRES.

Our photograph shows the ruins of the stately Cloth Hall at Ypres. A 25-h.p. Vauxhall car is seen in the foreground.

that the glare from powerful motor-lamps should not act as a guide to hostile aircraft, and in part on account of the belief that such lamps were being used by German spies for signalling to raiders. The war is over, and even if the Germans should refuse to sign the Peace Treaty and hostilities be resumed—which appears highly improbable—the enemy has been so far stripped of his aircraft that it is impossible for him to resume aerial hostilities against this country. The whole matter of lights was raised in Parliament the other day, when the Home Secretary was asked if the regulation could now be modified, in view of the fact that five-inch lights are insufficient for driving in the country at night, and whether a new regulation cannot be framed by which the glare of headlights may be modified

other users of the highways. As an old cyclist, I must say I cannot subscribe to this idea at all, and in any case I conceive that the rear light is an essential in the interests of the cyclist himself. If we could secure all the records of fatal and serious accidents to cyclists at night, in which the rider has been collided with by an overtaking car, we should find that all the evidence points to the majority of such accidents being caused by the absence of a rear light. Personally, I have always carried either a rear light or one of the effective reflecting devices which are the



WELL KNOWN IN THE MOTORING WORLD: SIR W. YARWORTH JONES AND LADY JONES.

Our photograph shows Lady and Sir W. Yarworth Jones, K.B.E. Sir Yarworth Jones is well known in the motoring world, and has recently been honoured by the conferring upon him of the K.B.E., in recognition of his war services.

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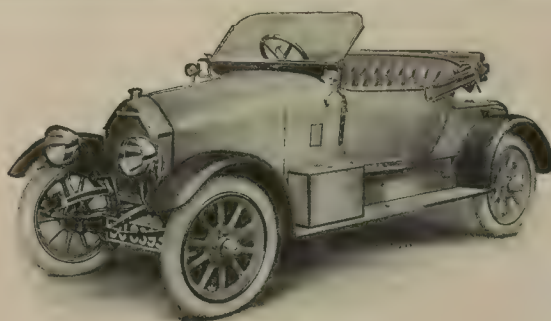
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make the Long Drive Longer.

CLINCHER
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Motor TYRES

Continued.] remote, that the seeker after bargains is likely to be disappointed.

The Revival of Motor Sport. On all hands automobile sport is reviving in a most satisfactory manner, and I continue to receive details of club and other fixtures which take one back to the times before the war. The A.C.U. informs me that the Six-Days Trial is to be revived, and will be held from Sept. 15 to 20, when daily runs will radiate from Llandrindod Wells as a centre. It is a well-chosen centre, too, and the daily runs will probably lack nothing in severity. The Essex Motor Club announces the first of the post-war race meetings, to be held, by permission of the Southend Corporation, on the Western Esplanade at Westcliff on June 25. It is to be an open meeting, and to include classes for cars and motor-cycles of all types, which should make the events quite interesting. Then the Junior Car Club—which, by the way, has just become associated with the R.A.C.—is to hold a hill-climb at South Harting on June 21, embracing all classes of light cars. The Motor-Cycling Club has received a quite satisfactory number of entries for the London-Edinburgh run at Whitsuntide, including cars as well as motor-cycles. Altogether, then, the prospects for the season are looking very healthy indeed.

Benzol for Motorists. The Automobile Association is compiling a list of retailers, motor garages, etc., stocking benzol. This list will be complete, and will include the names of several hundred depots throughout the country where this home-produced motor-fuel may be obtained. In the meantime, the Automobile Association continues its campaign for the home production of benzol and commercial alcohol.

Public meetings held at Exeter, Guildford, and Lewes have been enthusiastically supported by local motorists, and further meetings are being arranged. Motorists desiring information concerning benzol retailers are invited to communicate with the Fuels Department, A.A. and M.U., Fanum House, Whitcomb Street, London, W.C.

A Trade Amalgamation. The directors of the Siddeley-Deasy Motor-Car Company, Ltd., announce that the offer made by the Armstrong-Whitworth Development Company for the exchange of shares having been accepted by the holders of 92½ per cent. of the shares, such offer is now binding, and the new certificates will be issued in due course. W. W.

"KISSING TIME," AT THE WINTER GARDEN.

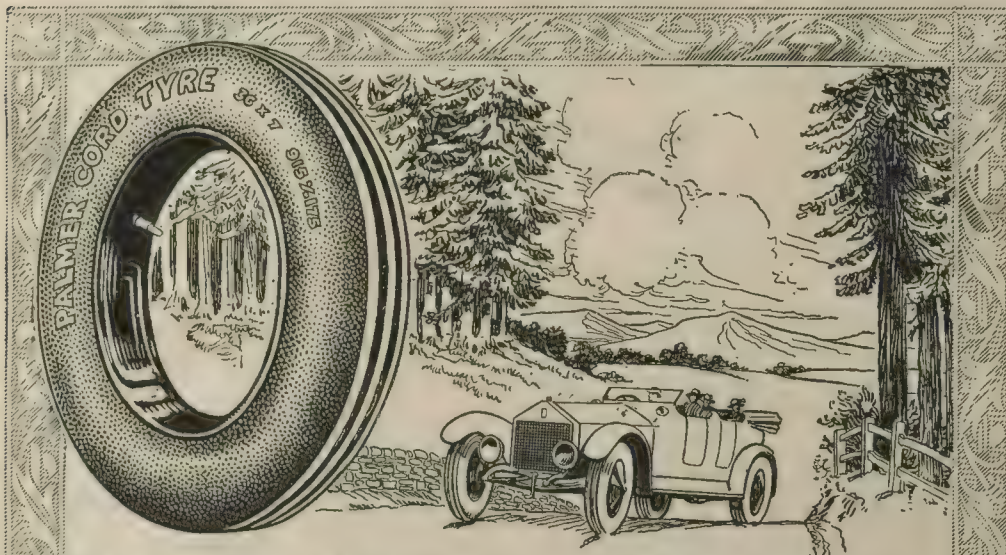
WITH an audacity which has every appearance of being assured of success, Messrs. Grossmith and Laurillard have converted what was the old Middlesex, or "Mogul," a music-hall that retained its chairman and his hammer right down to recent times, into one of the smartest and most attractive of West End theatres. Thus, in the Lane once notorious for its slums, the extremes of London's population will rub shoulders again, as in days when Nell Gwynn had her lodgings near by. What play-goer with any instinct for historical associations could fail to survey complacently an enterprise which thus piquantly reminds him of the past, even though the entertainment provided is of a sort that is usurping rather more than its due share of public favour just now!—the more so as the managers of this beautiful new Winter Garden Theatre have enrolled under their banner a group of old favourites,

some of whom for various reasons have been longer absent from the stage than Londoners care for their favourites to be. There is Mr. George Grossmith himself, for instance; his cheery personality, neat style, and gifts of dancer and discus are too good to be lost, as was shown by the roar that went up on the first night when in *poilu* disguise he made his quaint re-entry. And Mr. Leslie Henson, again, in the rôle of a meek husband whose wife the returned soldier calmly annexes, is so mercurial, so resourceful, so irresistible a comedian that his re-appearance means a solid addition to the gaiety of London. Then, too, we have Miss Phyllis Dare, looking no less winsome, and singing far better than hitherto, besides clever actresses such as Miss Yvonne Arnaud and Miss Avice Kelham, and full-blooded humourists such as Mr. George Barrett and Mr. Tom Walls. It would be a poor show this galaxy of talent could not recommend. But really the adapted Gallic farce is quite amusing in itself; while the score which Mr. Ivan Caryll provides for "Kissing Time" is full of melody, though it is melody that is a trifle saccharine at times; and scenery and costumes are worthy of the playhouse.

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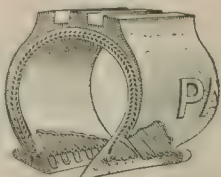
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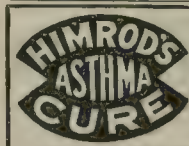


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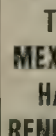
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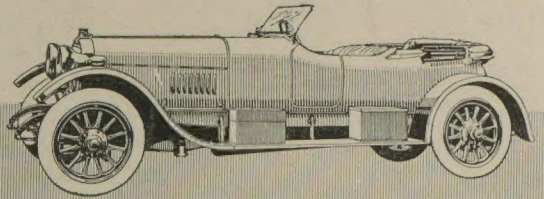
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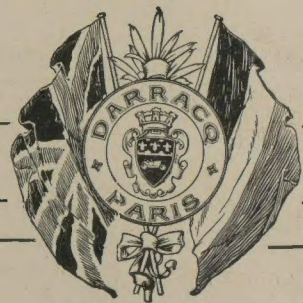
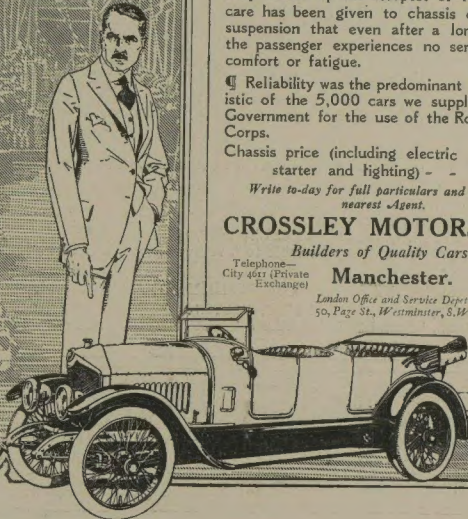
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SOAK 1 dessert spoon of Goodall's Egg Powder in $\frac{1}{2}$ a pint of milk; when well soaked place in a whipping bowl with $\frac{1}{2}$ lb. of castor sugar, lemon essence or rind, and whirl well by placing the bowl in warm water until mixture is thick, then mould in small moulds which have been greased and slightly sugared; cook in a moderate oven.

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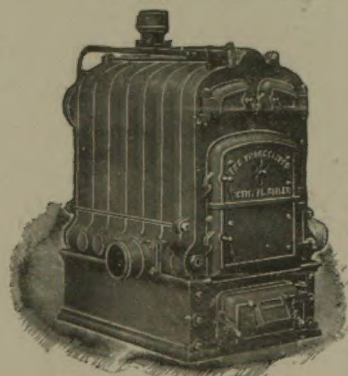
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